ANNUAL REPORT

OF THE

SUPERINTENDENT

OF THE

Montreal Water Works,

FOR THE

YEAR ENDING 31st DECEMBER 1866

of the Water Committee.

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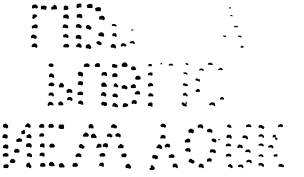

ANNUAL REPORT

OF THE

SUPERINTENDENT OF THE MONTREAL WATER WORKS.

FOR THE

YEAR ENDING DECEMBER 31st, 1886

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To the

Mayor Aldermen and Citizens of the City of Montreal,

GENTLEMEN,

I have the honor to submit my report for 1886. on the management of the City Water Works, dividing the subject as follows. — 1st Aqueduct. — 2nd Pumping Works at Wheel House. — 3rd Work Shop at Wheel House. — 4th Tail Race. — 5th Pipe Track and Pumping mains. — 6th Reservoirs. — 7th High Level Service. — 8th Pipe Laying. — 9th Maintenance of Distribution and Service Pipes. — 10th Consumption of Water. — 11th General remarks on the distribution mains and fire service. — 12th Meters. — 13th Administration. — 14th Appendix.

1st. AQUEDUCT.

The ordinary repairs to banks. ditches. farm bridges and fences, have been made as far as needed. These repairs are a matter of annual recurrence and are necessitated by the damage resulting from the winters frost.

Three Flood-Gates were constructed and put at the Entrance to the Aqueduct, to guard against any accident to the Regulating gates, which are $\frac{3}{4}$ of a mile lower down. near the junction of the Inland cut

with the old Aqueduct and which serve to control the flow in said Aqueduct. By means of these Flood-Gates the water may be drawn down in the Inland cut when necessary. The contract for these Flood-Gates (not including the requisite ballast) was awarded to Messrs Hood & Son, on the 22nd of June last, for $5,470.\frac{00}{100}$. This was more than $6,000.\frac{00}{100}$ cheaper than the plan at first proposed. The work was satisfactorily completed in November last.

The water course passing under the new and the old Aqueducts near their junction, has given some trouble to farmers lower down, by flooding their land, the water remaining thereon a part of the summer. This is owing to the ditch not being properly cleaned through the farms. This ditch being a public water course under the control of the Parish of Lachine, an application should be made to the Council of the Parish to have the matter adjusted by them, according to the laws governing rural municipalities, in such cases.

In the month of November last a fire occurred near the residence of the Guardian of the Aqueduct, by which a shed used for storing chains, tools &c. was destroyed. There was no insurance on it. A new shed has been built (at a cost of about $150.\frac{00}{100}$) and has been insured.

2nd. PUMPING WORKS AT WHEEL HOUSE.

The Breast Wheel and its pumps and the pumps now operated by Wheel No 3, (a turbine) are in working order, but require constant vigilance and attention, to keep them so. This is not surprising as they have been in operation since 1856, over 30 years. It will be necessary in a year or two to replace them by new machinery. See report of Mr. Kearney, in appendix, page 10.

The rest of the pumping machinery and the buildings are in tolerably good order, having had the requisite repairs during the past year and with small expenditure they can be kept in proper condition this year.

The pumping works comprise three Turbine Wheels and one Breast Wheel of a combined capacity of 12½ millions of gallons per 24 hours, and three steam pumping engines of 21 millions of gallons per 24 hours. Of the three steam engines, only two, (18 million gallons capacity) are reliable, the third, as it cannot be sold advantageously, is kept in order, in the hope that it might be useful in a case of emergency.

For full particulars regarding the pumping works, I beg to refer to the report of Mr. Kearney, Engineer in charge. His report, which I endorse will be found in the appendix, page 10.

The total quantity of water pumped by water power during the year is 3,373,642,000 gallons, with an expanditure of $\$6.271\frac{52}{100}$ as shown in Schedule No. 13, under head "Wheel House," making $1.619 per million of gallons raised 169 feet high or $0.0096 per foot high.

The total quantity pumped by steam power during the same period is 741,033,000 gallons, with an expenditure of $\$17,331\frac{37}{100}$ or $23,388 per million gallons raised 169 feet high or $0.138 per foot high.

The following table shows the cost of raising 1 million gallons 1 foot high by water and by steam, for the last twelve years and the average cost by each method for that period.

YEAR.	BY WATER.	BY STEAM.
1875	$0.0200	$0.119
1876	0.0140	0.144
1877	0.0158	0.080
1878	0.0106	0.170
1879	0.0093	0.119
1880	0.0120	0.123
1881	0.0136	0.121
1882	0.0118	0.258
1883	0.0135	0.134
1834	0.0124	0.211
1885	0.0102	0.094
1886	0.0096	0.138
Average of 12 years	0.0127	0.143

3rd. WORK SHOP AT WHEEL HOUSE.

The efficiency of the machine shop at the Wheel House has been maintained as usual. The following is a list of the new work turned out there.

39 fire hydrants.
4 four nozle hydrants.
1 sentinel valve.
44 four inch valves.
32 six do
19 eight do
6 ten do
7 twelve do
4 four inch valve spindles.
4 six do do do
1 ten do do do
1647—½ inch pneumatic stop cocks.
141—⅝ do do
8—1 do do
237—½ inch 2 way branches.
86—½ do 3 way do
91—½ do 4 way do
9495 tube couplings for pneumatic cocks.
3038 tube caps for same.
59—½ inch stop cocks.
47—½ do 3 way stop cocks.
173—½ do nozles.
860—⅝ do do
36—1 do do
694—1 do service caps.
25—1½ do do
281 malleable iron, 1 inch caps for pneumatic cock tubes.
137 service rods.
24 watering nozles for hydrants.
17 brass wire springs.
1 tapered steel spring 4", 1¼", ⅜".
2—4 inch meter connections, faced, drilled and fitted with brass strainers.
228—½ inch x ⅝" reducing couplings.
80—½ do couplings.

2 air pumps.
22—$\frac{5}{8}$" nozle drills, steel.
6—1" do do
40—1" square bolts for pump chest covers, wheels 2 & 3.
254 picks.
1 pair brass bushes for connecting rod, fitted, wheel No. 3.
2 foot valve bushes turned and fitted, wheel No. 2.
1 foot $1\frac{1}{4}$ inch bolt and nut.
2 steam valve spindles.
8 ball cocks.
1 hydrant nozle cap bored and tapped for 2 inch pipe.
100 - $\frac{3}{4}$ inch bolts and nuts.
2 sets grate bars for boilers.
2—4 inch bonnets tapped for 2 inch pipe.
4—8 inch slip sockets bored.
10—8 inch pipes turned.
8 flanges faced and drilled.
120—$\frac{1}{2}$ inch bolts and nuts.
1 meter cover fitted and drilled.
6—1 inch meter couplings.
16 hydrant sockets.
146 union meter pistons.

Besides which there were 40 meters repaired, 7 air pumps, 8 drinking fountains, 16 hydrant rods, 120 grate bars, &c., and 9,350 lbs. of brass castings, delivered from the brass foundry.

4th. TAIL RACE.

The damage caused to the banks as described in my report for '85 has been remedied and the North East bank has been raised one foot higher than the highest water observed at the time of the inundation, which reached the level of 28 feet above City datum. That portion of the bank which had been undermined by water, was made secure by crib work. The bank as now formed is expected to make a safe barrier against high water invading Point St-Charles from the South West. The work was done by the contractors Messrs. Nish & Lefebvre, for the sum of $\$3,863.\frac{52}{100}$.

It now remains to set the fences in proper order, to renew the flooring of the bridge over the Tail Race at the Lower Lachine E and to point the masonry of the abutments.

5th. PIPE TRACK & PUMPING MAINS.

The 30 inch main from the new Worthington Engine, to join, at Atwater Avenue, that from Engine No. 3, was commenced in '85 but so late in the season that the work was carried into the winter and had finally to be discontinued, owing to back water in the River St-Pierre. It was resumed in the Spring and completed in August '86. These interruptions brought the cost higher than had been anticipated.

The levelling of the ground on the pumping mains, in that portion of Atwater Avenue South of the Lachine Canal,—in order to procure material to raise the North East bank of the River St-Pierre, above flood level,—was begun late last Fall. It is contemplated to finish this part of the avenue early next summer. Nothing more has been done on this avenue except the erection of barriers to prevent people from depositing garbage and obnoxious material carted from private yards.

The usual cleaning and oiling of the big valves on the pumping mains, has been done, as is customary, and all are in good order.

Some attention will have to be paid to the retaining wall near Dorchester street on Atwater Avenue.

6th. RESERVOIRS.

The ordinary repairs were done to the McTavish Reservoir. The division wall is leaking considerably and some pointing must be done as soon as a proper opportunity offers. Some of the wooden fences will require to be straightened, where the posts have been disturbed by frost. The fences also require painting.

The Peel street High Level Reservoir is in good order and requires hardly any repairs.

7th. HIGH LEVEL SERVICE.

The pumping engine for the High Level Service is a Worthington non condensing. It has done its work with its usual efficiency, but, very soon, (perhaps next summer) this engine will be found too small for the work of the rapidly increasing distribution of the High Level district. Schedule No. 4, in the appendix shows the work done by this engine, viz : 48,320,000 gallons pumped 213 feet high in 3,306

hours, at a cost of $2,576.51 making $53.32 2/16 per million gallons raised, or $0.2503 per million gallons raised 1 foot high.

The cost of raising 1 million gallons 1 foot high, was :

In 1876	$0.240
" 1877	0.253
" 1878	0.355
" 1879	0 283
" 1880	0.274
" 1881	0.226
" 1882	0.256
" 1883	0.286
" 1884	0.318
" 1885	0.376
" 1886	0.250
Average of 11 years	0.283

8th. PIPE LAYING.

The total length of cast iron pipes laid during the year 1886 was 34,886 lineal feet, viz :

430 feet of 30 inch, 6,385 feet of 24 inch, 7,366 feet of 12 inch, 2,087 feet of 10 inch, 9,967 feet of 6 inch and 8,651 feet of 4 inch; 86 valves, 3 of 30 inch, 3 of 24 inch, 7 of 12 inch, 7 of 10 inch, 18 of 8 inch, 22 of 6 inch, and 26 of 4 inch. 42 fire hydrants were laid. There were 1,326 houses supplied with water, out of which 1,295 are through pneumatic cocks. (Part of the 430 feet of 30 inch pipe above mentioned, was laid in '85 but was omitted from the schedule of that year and is consequently included in this years.) There have been taken up, of old pipe, since 1884, 5,287 feet of 6 inch, 8,385 of 4 inch and 752 of smaller mains. The work of '86 added to the amount of pipeage &c., laid up to December 31st. '85 and deducting old pipe taken up as stated, makes the totals to December 31st. '86 as follows ; 23,553 lineal feet of 30 inch pipe, 39,303 feet of 24 inch, 2,694 feet of 16 inch, 45,647 of 12 inch, 77,156 of 10 inch, 6,853 of 8 inch, 206,091, of 6 inch, 347,622 of 4 inch, 2,095 of 3 inch and 11,948 of smaller mains, making a grand total of 762,962 lineal feet or 144½ miles of main pipe.

There are 13 valves of 30 inch, 32 of 24 inch, 4 of 16 inch, 63 of 12 inch, 91 of 10 inch, 28 of 8 inch, 301 of 6 inch, 625 of 4 inch, 38 of 3 inch and 1 of 2½ inch, making a total of 1,196 stop valves.

There are 945 fire hydrants including 52 which are private property. The number of houses supplied with water is 29,981.

Besides the foregoing, there were laid during 1886 for private individuals 18 feet of 6 inch pipe, 612 feet of 4 inch pipe, 1 six inch valve and 18 four inch valves.

9th. MAINTENANCE OF DISTRIBUTION PIPES, SERVICE PIPES, HYDRANTS AND PUBLIC FOUNTAINS.

This service received during the year more than the customary attention and with very satisfactory results, in the way of repressing waste of water as is indicated by the smaller increase in consumption as compared with that of the year previous, notwithstanding a considerable increase in population and extension of distribution pipes. In spite of many adverse circumstances it has been possible to confine the waste of water within reasonable limits, that is to an average daily consumption of 12,643,000 gallons for a population of about 195,000 (including St-Gabriel and Cote St-Antoine which places we supply) or 65 gallons per capita.

The report of Mr. Lagacé, foreman of the distribution and pipe extension, will be found in the appendix and gives all details of this branch of the service, indicating all the improvements and repairs effected during the past year, to the pipes, stop valves, hydrants &c., a repetition of which here, is unnecessary and would be tedious. Many suggestions in the report alluded to are worthy of consideration.

10th. CONSUMPTION OF WATER.

The total amount of water pumped during the year is 4,614,679,060 gallons, making a daily average as shown by Schedule No. 7 of 12,643,000 that is an increase of 672,500 gallons over the daily average of 1885.

Of the above quantity 391,518,000 gallons have been metered and charged for at meter rates, 365,486,000 gallons of it used in the City and the balance 26,032,000 gallons supplied to outside municipalities.

For flooding rinks and slides, filling boilers, tanks, &c., 343,000 gallons were used, 2,653,000 for fires, 36,238,000 for watering streets, and 17,712,000 for public fountains.

For the fountains and latrines on the wharfs 10,498,000 gallons, and for lubricating the steps of the turbine wheels at the pumping works 25,631,000 gallons.

The balance 4,130,086,000 gallons is that part of the City's consumption which is paid for at rates based on assessed rental and includes waste.

11th. GENERAL REMARKS ON THE DISTRIBUTION MAINS AND FIRE SERVICE.

Under this head, in my last year's report. I remarked on the growing necessity for the use of steam Fire Engines, and in this connection suggested the propriety of laying larger mains in certain streets, so as to throw a great volume of water into the centre of the City, with the view of maintaining the pressure, under a heavy draught for fire purposes. This resulted in the laying of a 24 inch pipe leading from the McTavish Reservoir to St-Paul street, passing through St-Catherine, De Bleury, St-Peter, St-James and St-Sulpice streets, and connecting at their crossings with the mains of St-Catherine, Dorchester, Lagauchetiere, Craig, St-James and Notre-Dame and at St-Paul street with a 12 inch pipe laid from McGill to Bonsecours street, the old 6 inch pipe of that part of St Paul street being taken up. Along these new mains the necessary valves and fire hydrants were placed. The entire distribution system has thus been greatly improved, being enabled to furnish a very large quantity of water without any sensible reduction of pressure. See tables of pressure in the appendix.

Whilst this work was in progress a discussion arose between the water Committee and the Fire underwriters. The latter suggested that the new 24 inch main might be connected with the High Level Reservoir, whereby an additional pressure of about 160 lbs per square inch could be had during fires. This excellent suggestion I was forced for the present to oppose, as our existing distribution system is not adapted for such a pressure.

The question was referred by the Water Committee to Mr. T. C. Keefer, C. E., the originator of our present system of water works. Mr. Keefer's report is now before the Public, who can judge as to the propriety of carrying out a separate system for fire service, which idea I think a happy one. Whatever decision may be reached, the laying

of the large pipe as above described, must still be of great service in keeping up the pressure throughout the distributing mains.

Last year I recommended that a 24 inch main should be laid in Ontario street from Delormier avenue to Desery street, Hochelaga ward. The Water Committee asked and obtained an appropriation for the work and the necessary pipes were bought. Subsequently however when the Finance Committee was asked for an appropriation for the 24 inch main from St-Catherine to St-Paul street they decided to grant it, but to reduce the first appropriation and let the pipes which had been purchased for Hochelaga, be used here instead, postponing the Hochelaga work to this year. I was therefore obliged to remodel my first estimate. An omission occurred in the estimates by which the ordinary pipe extension and services were left unprovided for. This item was much larger for 1886 than in previous years owing to the great increase in the number of new buildings. The consequence was, money had to be asked for as the work progressed and this gave rise to an idea that the first estimates were made too low. Such was not the case, as the making up of the books at the end of the year showed them to have been correct.

The necessity for the 24 inch pipe in Hochelaga ward is still pressing. The work should be done as soon as possible and to that end the opening out of Ontario street should be proceeded with immediately.

12th. METERS AND HOUSE INSPECTION.

All necessary information on these items may be found in the report of the Assistant Supt. W. W. hereto appended.

13th. ADMINISTRATION.

As shown by Schedule No. 13 the cost of Administration during the year was $86,301.79.

The natural growth of the City, with that due to the annexation of outside municipalities has been such that larger expenditure for the maintenance and administration of the Water Works must now be looked for. This is plainly indicated by my estimate of the requirements for this year. I am obliged to ask for a much larger sum than usual in order to keep the works up to their ordinary efficiency. On

the other hand, the increase of revenue keeps pace with that of expenditure, see Schedule No. 15.

I have often alluded in former reports to the necessity of reconstructing the Water Works Shop, Lagauchetiere street. This has been sadly overlooked in spite of my warnings and the work suffers from it, in point of economy as well as efficiency.

It is now apparent that we should have three or more outside stations where a small force could be kept to respond to orders for work in their immediate vicinity. The orders could be transmitted by telephone and could be attended to promptly, instead of being delayed until men can come from Lagauchetiere street shop carrying keys and tools perhaps to near the Eastern or Western limit of the City. Sometimes a delay in turning off water results in damage to property and the Corporation is held responsible. Many such cases might be avoided by the adoption of some measure similar to the one I have alluded to.

I have the honor to be,

Gentlemen,

Your faithful servant,

LOUIS LESAGE,
Supt. M. W. W.

City Hall,
Montreal, March, 12th. 1887.

APPENDIX

CONTENTS.

Report of the Assistant-Superintendent of Water Works, on Meters and House-service Inspection, with epitomized Statistics of the Water Department, for the year 1886.

Montreal, March 19th 1887.

LOUIS LESAGE, Esq.,
Supt. M. W. W.

Sir,

I beg to submit the following report on the operations of the Meter and House-Service Inspection branches of the Water Department, also a summary of the statistics of said Department, for the year ending 31st December 1886.

METERS.

The number of meters in use at the end of the year (inclusive of those at Wheel House), was 549, being 37 more than the previous year, 515 of these belong to the City and 36 to private individuals or companies.

There were 86 new places metered and 49 meters in use were discontinued. There are 46 places metered merely by way of test or experiment, no charge being made.

There were 136 changes of meters made, for various reasons, some being out of order, some to be replaced by larger meters.

The number of meters damaged by frost during the past year was 20. Of these 19 belonged to the City and 1 to a water tenant. The last mentioned 1 and 6 of the others were totally destroyed. In all cases the damage was charged to those on whose premises it occurred.

There were 15 Worthington meters, 15 Gems and 11 Crowns, in all 41 new meters (the same number as in '85), with some parts, connections and fish traps, purchased during the year, at a cost including duty, freight and express charges, of $3,562.62. Besides these, 40 second hand meters which had been in use for domestic supplies at St.-Jean-Baptiste village, before its incorporation with the City, were bought from the proprietors, for $486.00.

There were 9 meters at the harbour latrines and fountains, where 10½ million gallons of water were used, an increase of 33 p. c. on the consumption of the previous year.

There were 5 meters at the Wheel House, 3 to measure water used at the steps of Turbines and 2 for supplies to boilers.

The water sold by meter was distributed as follows.

	Millions of Gallons. in 1885.	in 1886.
To Railways (including City Passenger).....	114.88	139.01
" Factories and Engines	60.24	7..43
" Elevators (exclusive of those at Hotels & Rys)	42.58	57.48
" Breweries.....	27.40	28.93
" Hotels.....	26.17	28.84
" Schools, Convents and Colleges.....	12.26	14.74
" Hospitals and Homes.....	4.59	5 38
" Churches and Queens Hall (for organs).....	3.11	3.19
" Miscellaneous, as Photographers, Livery stables, Skating rinks, Slides, Horse-Exchange, Restaurants, Dyers, Florists, etc..	10.37	16.49
" Outside Municipalities.....	11.30	26.03
Total	312 90	391.52

Showing an increase in every item for '86 over '85 and a total increase of 25 p. c.

Comparison of Meter Rates with Rates based on Assessed Rental.

		Gallons.
The total quantity of water pumped in '86 was		4,614,679,000
That bringing no direct revenue was for:		
Flooding private rinks, boilers, tanks, etc.	Gallons. 343,000	
Fires	2,653,000	
Watering streets	36,238,000	
Public Fountains	12,712,000	
Harbour	10,498,000	
Steps of Turbines	25,631,000	
Total		93,075,000
Balance producing revenue		4,521,604,000
That charged for at meter rates is		391,518,000
Balance, being that charged for at rates based on assessed rental and including waste		4,130,086,000
The revenue from water in '86 is		$ 521,628.09
That from metered water is,		
For water	$ 62,020.56	
For Rent of meters	3,190,23	
		* 65,210 79
Balance, being revenue from rates based on rental		$ 456.417.30
Total water from which revenue is derived.....gallons		4,521,604,000
Total revenue from same		$ 521,628.09
being at the rate of $11\frac{54}{106}$ cents per 1000 gallons.		
Total water sold at rates based on rental.....gallons		4,130,086,000
Total revenue from same		$ 456,417.30
being at the rate of $11\frac{3}{5}$ cents per 1,000 gallons.		
Total water sold at meter rates .....gallons		391,5180,00
Total revenue from same		$ 65,210.79
being at the rate of $16\frac{2}{3}$ * cents per 1,000 gallons, or $1\frac{1}{2}$ times as much as that sold at rates based on rental.		

* St.-Gabriel viliage is about $7,000.00 in arrears for water, which amount, if paid would bring the price per 1,000 gallons up to 18½ cents.

It was mentioned in the report for '85 that a general inspection of water fixtures on premises where meters are in use, had been commenced by the Chief Inspector He has not yet completed it, for want of time, having been pretty fully occupied the past year with his ordinary routine work. It is hoped that this year may see the inspection completed. So far as it has gone, some information very useful to the Department, has been acquired and recorded in a shape convenient for reference.

The new testing tank you have caused to be erected and the enlargement of the meter work shop, greatly facilitate the ever increasing work in this line.

All meters in use, have been visited regularly once a month and the readings taken and recorded.

The number of prosecutions in the Recorder's Court for violation of the by-law relating to meters. was 4, for the year 1886.

HOUSE SERVICE INSPECTION.

This Inspection has been kept up throughout the year, four Inspectors being constantly employed. The result of their labors was the discovery and stoppage of waste from defective fittings as enumerated below, viz :

Bib cocks out of repair	1,193
Urinal do do	90
Ball do do	675
Stop do do	21
Closet do do	163
Basin do do	90
Closet valves do	93
Closet wires or handles out of repair	14
Pipes burst	282

The estimated average waste per hour from each of the above named defective fittings was 11 gallons. Besides these, the Inspector found 35 taps left open to prevent freezing, wasting at an average rate of 16 gallons per hour, 44 taps left open to flush drains wasting 38 gallons per hour each, 150 cases of using water illegally for building purposes, 83 cases of using hand hose illegally and 5 using water illegally for manufacturing purposes. In all the foregoing the waste was stopped soon after having been discovered. The number of prosecutions was 37.

SUMMARY OF STATISTICS

REPORT OF 1886.

IN ACCORDANCE WITH THE RECOMMENDATION OF THE NEW ENGLAND WATER WORKS ASSOCIATION.

MONTREAL WATER WORKS.

Montreal. County of Hochelaga, Province of Quebec, Canada. supplies also the municipalities of St. Gabriel and Côte St. Antoine'

POPULATION.

Montreal, by census of 1887	185,500
St. Gabriel, census of '81 4,506, estimated for '86	5,500
Côte St. Antoine.. do do	1,500
Total	192,500

DATES OF CONSTRUCTION.

LOW LEVEL SERVICE—

Aqueduct	1856
2 Breast Wheels, with six pumps	
Capacity 4 million gallons per diem.	
1st. 24 inch Rising main	
McTavish Street Reservoir, 15 million gallons.	
1 Turbine wheel with two pumps	1865
Capacity 4 million gallons per diem.	
2nd 24 inch Rising main.	1867
Bartley Steam Engine, 3 million gallons	1869
Gilbert do do	1872
Tail Race lowered...	
Turbine substituted for Breast Wheel	1874
Worthington Steam Engine, 8 million gallons	1875
1—30 inch Rising main.	
New entrance to Aqueduct opened.	1877
Extension of McTavish Reservoir, bringing its capacity to 35 million gallons	1878
Turbine Wheel 2 pumps, 2½ million gallons.	1881
Bartley Engine removed.	1885
Worthington Steam Engine, 10 million gallons.	1886

HIGH LEVEL SERVICE—

Peel Street Reservoir, Capacity 1¾ million gallons.	
Worthington Steam Eng. do ½ do per diem.	
1—12 inch Rising main.	

BY WHOM OWNED.—City of Montreal.

SOURCE OF SUPPLY.— River St. Lawrence.

MODE OF SUPPLY.—Open Aqueduct 5 miles in length.
84 per cent pumped by water power.
16 do steam do

PUMPING.

1. Builders of Pumping Machinery—

Water Wheels.—Wm. Fairbain & Son, Manchester, England.
John McDougall, Montreal.
W. P. Bartley & Co. do
Steam Engines.—W. P. Bartley & Co. do
E. E. Gilbert, do
Henry R. Worthington, New York.

2. Description of Coal used.

	Low level service.	High level service.	
Kind	Bituminous		Anthracite.
Size	Broken		Pea & Chestnut.
Brand	Scotch & International.		
Price per gross ton	$5.00	$3.25	$5.20
Percentage of ash		6.25	18.17
5. Coal consumed for year.....lbs.		4,156,260	562,680
6. Total pumped by steam. ...gallons		741,033,000	48,320,000
7. Average static head in feet..		169	213
8. do dynamic do		173	230
9. Gallons pumped per lb. of Coal...		177.46	85.87
10. Duty, ft. lbs. per 100 lbs. of Coal (no deductions)		30,844,700	19,751,200
6. Total pumped by Water power for year, in gallons		3,873,647,000	
7. Average static head, in feet		169	
8. do dynamic do		194	

Cost of Pumping figured on Pumping Station expenses,

	Low Level Service. By water.	Low Level Service. By steam.	High Level Service. By steam.
viz:	$6,271.52	$17,331.37	$2,576.51
11. Cost per million gallons raised against dynamic head	$1.61\frac{9}{10}$	$23.38\frac{8}{10}$	$53.32\frac{2}{10}$
12. Cost per mill. gall. raised 1 foot (dynamic)	$0.00\frac{83}{100}$	$0.13\frac{52}{100}$	$0.23\frac{18}{100}$

Cost of Pumping figured on Total Maintenance for year,
viz: $378,900.00

13. Cost per mill. gallons raised against dynamic head 82.11

CONSUMPTION.

1.	Estimated total population at date	193,000
2.	do do supplied	192,000
4.	Total number of gallons consumed	4,614,679,000
5.	Passed through meters, domestic 291.16 million galls.	or 6⅓ p. c.
6.	do manufacturing 100.36 do	2⅙ do
7.	Average daily Consumption gallons	12,643,000
8.	Gallons per day to each inhabitant	65.5
9.	do do consumer	65.8
10.	do do tap. i. e. house supplied	421.7

DISTRIBUTION.

1.	Kind of pipe used	Cast Iron.	Wrot. iron & lead
2.	Sizes do	3" to 30"	2½" and under
3.	Extended, feet	34,886	
4.	Discontinued, feet	13,672	752
5.	Total now in use, miles	142¼	2¼
9.	Hydrants added	42	
10.	do now in use	945	
11.	Stop Gates added	86	
12.	do now in use	1,195	
15.	Range of pressure on mains, day and night at Fire Station No. 2 St. Gabriel Street	45 to 65	

SERVICES.

		Lead and Wrot. Iron.
17.	Sizes	from 2½ to ½ inch.
18.	Extended feet	31,124
21.	Service taps added (new houses supplied)	1,326
22.	Total now in use (houses supplied)	29,981
23.	Average length of service pipe	23½ feet.
24.	do cost do "	$9 32
25.	Meters added	86
26.	do now in use	549
27.	Motors added	23
28.	do now in use	95

FINANCIAL.

MAINTENANCE.

RECEIPTS.

Division 1.

From Consumers.

Water rates, Domestic		$498,616 00
" " Manufacturing		23,012 00
Net Receipts for Water		521,628 00
Miscellaneous (job work, &c.)		3,325 00
Total		$524,953 00

Division 2.

From rates based on rental	Domestic	$450,118 00	
	Manufact'g	6,299 00	456,417 00
From Meter rates	Domestic	$48,497 00	
	Manufact'g	16,714 00	65,211 00
Net receipts for water			$521,628 00

EXPENDITURES.

Management and Repairs	$81,686 00
Interest on cost of Works	297,214 00
Total maintenance for the year	378,900 00
Refunded Water rates	1,518 00
Balance, applicable to payment of sinking fund and share of general financial expenditure and to construction	144,535 00
Total	$524,953 00

CONSTRUCTION.

Extension, mains } " services }	$ 110,731 00
New Engine (from loan)	45,588 00
Flood Gates do	5,979 00
Raising tail race bank (from revenue)	4 616 00
Total	$166.914 00

Net Cost of Works to 31st Dec. 1886..... $6,294,308 00
Rates of Interest on same..... 7, 6, 5 and 4 per cent.

B.-D. McCONNELL,
Assistant Supt. M. W. W.

PUMPING WORKS, JANUARY 21st 1887.

LOUIS LESAGE, ESQ.,

Superintendent Water Works.

DEAR SIR,

I respectfully beg to submit my annual report on performance, conditions and requirements of the works over which I have charge.

No. 1. WHEEL HOUSE.

No repairs worthy of mention were done to this building. The doors and windows will require painting.

Nos. 2, 3 & 4. WHEEL HOUSE.

A heavy leak from the Tail Race, made its way through the foundation at or near the south end of this building, which seriously threatned to flood the pump room to a height that would prevent access to the foot valve chambers of the pumps, this I effectually and permanently remedied, by building a division wall at the west end of the pump room, trapping the leak from said room, allowing the Tail Race water to find its level on southside of said wall, which, removes all the trouble before complained of. A new set of double windows was furnished. The doors, windows and hand railings will require painting.

WORK SHOP.

This building underwent no repairs and is not likely to require any during the year. When this shop was projected, tools were acquired to meet the requirements of the time, which are inadequate for the present. In order to meet the present, and the requirements of the immediate future I would like to have two (2) more lathes with all their works holding accomodations serviceable for our work, added to the shop tools.

BRASS FOUNDRY.

This shop was for the first time found inadequate to meet the requirements of the Department owing to the large amount of work required. This is likely to be the case for the future. We cannot go into the general manufacture of all that is wanted, but can only be looked at in the light of a repair shop. In the case of this particular shop I think it will be more profitable to have that portion of the work which we cannot do, done outside, than to increase staff and plant to meet it.

HIGH DUTY ENGINE HOUSE.

This building underwent considerable repairs, a portion of the front had to be extended five feet. in order to allow of convenient working space for the removing of parts of the engine, when required.

Two new floors were laid, one replacing the old one in the engine room, and the other on a level to suit the under works, and valves of the engine. The basement platform which was entirely floated up by last spring flood, was relaid in an improved manner and steam heating coils placed around the engine room. Considerable repairs remain yet to be done to the ceiling and other parts, and the whole interior including the doors and windows will require painting and varnishing, the outside cornice as well.

BOILER HOUSE.

No repairs were done to this building, excepting the painting of the roof. It is at present in good order and not likely to require any repairs during the year.

THE COAL SHED.

This building is in the same condition as when last reported, nothing having been done to the stone buttresses of the foundation.

The planks on the gangways to the flooring will require to be renewed.

THE DWELLINGS.

The roof, cornice, windows, blinds and railing in front, will require painting; also the railing round the Tail Race in front of the Wheel House.

THE GROUNDS.

The grounds will require somewhat more than the ordinary attention; as they have been considerably disturbed by the repairs to the mains on the premises. Atwater avenue, from the works to St-Patrick street, will require considerable repairs; the foot path being entirely up-rooted will have to be renewed. The roadways on both banks of the Aqueduct from the Wheel House to the stone bridge; having been damaged by the hauling of stones for the new crib-work on the tail race, should be placed in their former good condition. The Bridge spanning the Aqueduct at its entrance to the settling pond, is in a tumble down condition; it ought to be renewed or very much repaired. Some trees will require to be planted, replacing those that did not take.

No. 1 WHEEL.

This wheel stripped the wooden cogs off the large bevelled wheel, on the 13th of Aug. and started with the new set on the 28th of the same month. During the stoppage, I had new brasses fitted to the connecting rod fork end straps, and the lost motion taken up, the machinery was painted, also the hand railing, flume and all pipes within the building. One of the discharge pump valves was removed and replaced by a new one. It will be necessary as soon as opportunity will permit to remove another; the valve to replace it is now ready. The wooden cogs in the large mortice wheel will require to be renewed.

No. 2 WHEEL.

This wheel and pump did very good duty considering their age and infirmities. Sharp attention was required and given to the upright and diagonal arms. The pumps also being so much worn out of round, required often and careful packing, and when the

duty the wheel has performed during the year, is taken into consideration it is evident that it was well handled. The threads stripped on one of the pillow block bolts. They are two in number; I removed both and replaced them with stronger ones.

No. 3 WHEEL.

One of the connecting and strap brasses was renewed, the old one being worn out. One of the pumps worked loosely at its connection with the air Vessel, it was temporarily repaired. It will probably have to be renewed.

No. 4 WHEEL.

The repairs to this wheel consist of the paring of the cogs of the large bevelled wheel, it having moved out of its proper position on the crank shaft. The pinion on the upright wheel shaft was also found out of position; both were placed in their proper positions and more securely fastened. All the lost motion was taken up and it is at present in good order.

No. 1 ENGINE.

(THE NEW WORTHINGTON HIGH DUTY.)

This engine is ready when required to furnish the City with its 10 million gallons of water. Your wisdom in allowing the contractors to make such changes and improvements as appear to them necessary, to increase the efficient and economical working of the engine, at their own expense, is very apparent.

As the engine is still in the hands of the contractors, and no duty trial gone through, I think it prudent to refrain from advancing any opinions upon its practical or economical working.

No. 2 ENGINE.

Was not called into service, during the past year and is not likely to be this year. If you still consider this Engine as part o our pumping power to be held in readiness for duty, it will have to undergo heavy repairs, and consequently incur considerable expense before it can be relied upon for good service.

No. 3 ENGINE

The only repair done to this engine worthy of mention, was the renewing of one of the water cylinder plunger rod stuffing boxes, and gland. So perfect has been the operation of the weights, substituting the springs on the pump valves, that it was not found necessary to remove the pump covers during the year. The overhauling of the pistons referred to in my last year's report I was unable to carry out; in consequence of the new engine not being ready to do duty. This work will have to be done as soon as there is a favorable opportunity. Some of the cylinder drain pipes should be replaced as portions of them show signs of being worn out.

No. 1 BATTERY OF BOILERS.

These boilers were furnished with new steam gauges. Some slight repairs were done to the smoke box doors for convenience of handling. They did but little duty during the year. They are locked up at 75lbs. pressure; hitherto the highest pressure carried on these boilers was 60lbs, this of course left a large margin of safety, which is as it should be in works of such magnitude and importance.

No. 2 BATTERY OF BOILERS.

These boilers are locked up at their highest theoretical safe working pressure. The Inspector and myself are of opinion that this state of things should not long be continued. Should circumstances oblige the lowering of the steam, the high duty attachment would have to be thrown out of commission and the engine run low duty, which would incur a heavy loss in fuel.

I think the furnishing of the works with three new boilers of the most modern and economical type, would effect a saving and give a margin of safety such as we do not possess, though very much to be desired.

No. 3 BATTERY OF BOILERS.

This battery is used in connection with No. 3 Engine, only. They have performed their duty well and are in first class order. From all I can see at present, they will not require any repairs other than those consequent upon the ordinary keeping up of working boilers, and their connections.

THE PORTABLE STEAM PUMP AND BOILER.

This pump and boiler did a good deal of work during the year very satisfactorily. I was furnished with section of steam and exhaust hose and new runners for the boiler. It is at present in good working order.

Three lengths of the canvas hose furnished the works 12 years ago, for fire purposes, are worn out. and should be replaced.

In conclusion I beg you to accept my sincere thanks for the able assistance and wise counsel you so cheerfully rendered me in the discharge of my duty.

I have the honor to be Sir,

Your most humble servant,

D. KEARNEY, Engr.
Pumping Works.

WATER WORKS SHOP, LAGAUCHETIERE STREET

January, 1887.

TO LOUIS LESAGE, ESQ.,

Superintendent Water Works,

CITY HALL,

DEAR SIR,

I respectfully submit the report of the repairs done to main pipes, Stop valves, Hydrants, Service pipes, &c., during the year ending December 1886; also some improvements required next year; which are as follows:

REPAIRS TO MAIN PIPES AND STOP VALVES.

There have been three breaks on 10" mains, ten on 6" mains and thirty-three on 4" mains, some of these breaks were discovered at the time of the Fall floods of 1885, and could not be repaired before March 1886, on account of high water in low lying districts, wasting thereby a great quantity of water. Most of these breaks however were caused by the excavation made for drains, and some of them occurred during the time the contractors were making said drains. There have been seventeen joints blown out on the 12", fourteen on the 10", ten on the 6", and thirty-seven on the 4" mains, as above stated. The principal cause was the making of drains across or parallel to our pipes, which caused them to sink and the joints being thereby disturbed were blown out. However the seventeen joints blown out on the 12" mains, and the fourteen on the 10" mains were from divers causes. Most of the joints blown out were on Wellington street, from St-Etienne Southwards to limits. This pipe has been laid with very little lead and ungrooved faucets. Since laid it has been very expensive to keep in good order, as every Fall and Spring of the year many joints are found leaking on it. This is due as already stated to the want of lead, an improper faucet, and the state of the soil.

This pipe should be taken up and another 12" main laid in its place, with deep and grooved faucets, as the soil requires it. We marked the joints when repairing them and found that some of them were repaired several times on Wellington, also on McCord streets 12" main. The cause of fourteen joints being blown out on the 10" main was also the want of lead. I may here remark that these pipes were laid by contract. Last year, 1885, there were eleven joints blown out on the 12" mains both on Wellington and McCord streets, this year we had seventeen. Two six and four 4" valves were renewed. Two 10", seven 6", and fourteen 4" valve spindles were renewed, a good number of the 6" and 4" stop valves, need to be changed as they are no longer any use to stop water.

The stop-water valves at the following named places require to be changed.

Campeau, South side of Craig.....1—4"
Amherst & Notre-Dame.....1—4"
Wolfe, North side, Notre-Dame.....1—4"
Water & Brock.....1—6"
Common & Prince.....1—6"
Canning, South side, Notre-Dame.....1—6"
Sherbrooke & Redpath.....1—4"
Aylmer & Sherbrooke.....1—4"
Durocher & Sherbrooke.....1 —4"
Sherbrooke, West side, St-Lawrence.....1—10"
Belmont & Beaver Hall.....1—6"
Dorchester, West side, St-Urbain.....1—10"
Dorchester, West side, St-Denis.....1—10"
Dorchester, East.....1—10"
Dorchester East, Amherst.....1 -10'
Dorchester East, Panet.....1—10
Logan East of Visitation.....1—4"
St-Therese & St-Vincent.....1—4"
St-George South of Dorchester.....1—4"

IMPROVEMENTS TO MAIN PIPES.

One of the most important improvements on main pipes was begun in 1885, continued in 1886. For many years past pipes were laid with *dead ends* and the sludge-cocks put on those ends

were and are entirely insufficient to purify the water, which now remains stagnated in those *dead ends*. Those improvements should be continued and all *dead end pipes* extended and connected to the nearest main pipe when possible, so as to give a permanent and free circulation of water through all the main pipes in the City.

Aqueduct, Versailles, Lusignan, Guy, St-Martin and Chatham street main pipes, were extended across Grand Trunk Railway tracks and connected to St-James street 10" main. Versailles St-Martin and Guy streets were connected with 2" pipes only.

The 4" pipe on St-James street was extended from Lusignan to above Guy, and from Canning to near Dominion street. St-Martin and Guy streets, were connected to that 4" pipe; Craig street 4" main was extended from St-Hubert to Jacques-Cartier street, from Amherst to Wolfe street and from East of Visitation to Papineau square, where it connects to the 6" main. St-Hubert also Campeau street 4" mains were extended and connected to Craig street, 4" main. By the improvements mentioned on Craig street, there will be no more necessity when laying service pipes to cross the large tunnel, as there is now. A 6" main on South side and a 4" on North side, Parker lane 4" was extended and connected to Visitation street 6", Cherier street 6" main was extended and connected to St Denis street 6" main. Evans street main was extended and connected to St-Urbain street 6" main. With all the above mentioned extensions and connections, free circulation of water was given through not less then twenty-six *dead ends*.

The main pipes in the following named streets should be extended. Lagauchetiere street 4" to Papineau Road 10" or to 6" on West side; Leroyer street 4" to East side, Jacques-Cartier square 4"; Jacques-Cartier square East side 4" to St-Paul street 12"; Stanley 4" to St-Catherine street 6"; St-Luke street from Towers to Fort street; St-James street 4" East of Mountain, to Mountain street 12". The 4" main on Bonsecours and part of St-Denis street, could be disconnected from St-Paul street 6" main, and all the services on it connected to the 10". The 3" main on the West side of Jacques-Cartier square should be disconnected from Notre-Dame street 10" main, and the services on it connected to the new 6" pipe near by. A 10" or 12" main pipe should be laid on St-Antoine street from Mountain. West to limits as the mains now in are partly 4" and partly 6", making the pressure very poor on the hydrants in that locality. If possible a hydrant should be put on the very end of the

main pipes at the limits, in the following streets which would be very useful for fire purposes as well as the purifying of the water in our pipes, which now stagnates in those *dead ends*.

St-Antoine, West of Dominion street.
Coursol, West of Dominion "
Quesnel, " " "
Albert, " Fulford "
Delisle, " " "
Workman, " " "
Papineau Road, North limit.
Champlain, North of Ontario.
Maisonneuve, " "
Plessis, " "
Panet, " "
Beaudry, " "
Montcalm, " "
Amherst at North end.

On the main pipe in street, East of Delorimier and above Sherbrooke, Mullin street 4" main might be extended to the limits and a hydrant put on the end; Bourgeois street 4" could be extended to Leber street, and a hydrant put on end; Richmond street 4" should be disconnected from Basin street, and Basin street 4" connected to Richmond street 10". A 6" pipe could be laid on Guy from Notre-Dame to William street 6" main, and would enable us to give services to some shops on said street; a 6" main should also be laid on Versailles from Notre-Dame to Barre, which would be a great help to the latter street hydrants which are supplied from a 4" pipe, Versailles street in that part being only a $\frac{5}{8}$" lead pipe. Custom House square (East side), 4" main should be continued to St-Paul street (a branch having been left on the new 12" main). Capital street 4' main could be extended across Custom House square, and then connected to East side 4" main.

A 6" main should be laid on Inspector from St-Antoine street 6" main to St-James street 10" with a valve at either street. The 4" main on Mignonne could be extended and connected to Harbour street 4" main.

HYDRANT REPAIRS, &c.

Ninety-two hydrant valves were renewed, twelve old hydrants were replaced by non freezing hydrants. Two old kind hydrants were broken and replaced by same sort, fifteen hydrant rods were broken, most of them by contraction by cold.

The number of hydrants reported frozen, was five hundred and thirty-eight, two thousand five hundred and sixteen times, last winter being remarkable for the great number of hydrants frozen. This was mostly due to the water which remained in them all winter, after the Fall flood, to the height of sidewalk in the low districts. These hydrants reported as frozen were heated every day, as ice was found on top of water in them; another cause is the too frequent uncovering of the catch-basins during the winter and a sudden change to cold weather, the draught fills hydrant chamber with frost after which it is impossible to keep from freezing. The new non-freezing hydrants also feel the effects of the cold draughts, causing them to freeze when laid near those catch-basins.

The hydrants as a rule should be laid as least six feet away from those basins and not less than ten feet from street corners, so as to prevent top and bottom cold draughts as much as possible. When in the Fall of the year, before the snow, all the grates and footpaths being uncovered, the frost sinks very deep, as in some places to the depth of eight feet, then the hydrants, old or new kind are sure to freeze, as the shutting valve is only six feet below the surface, and in some of the four nozle hydrants the valve is only four and a half feet deep. One of those hydrants is placed at the corner of St-François-Xavier and Notre-Dame, and it is reported frozen almost every day in Winter. The one at St-Paul and St François-Xavier, stands close to an entrance to a cellar under footpath, the position of this hydrant should be changed or this entrance filled in. When a hydrant is laid near to a cold deep cellar, the cold draught from surface, the sewers, catch-basins &c., communicate together, and attract frost under footpath until it reaches the bottom of said cellar which is perhaps nine feet or more in depth. Some new non freezing hydrants, are reported from this cause mentioned above. Such is the five nozle hydrant above St-Sulpice on St-Paul, also that opposite St-Dizier on St-Paul.

The hydrants were always found in good working order at all the fires that occurred last winter, showing that the greatest care was taken

of them by the Inspectors. In the Summer there are five hydrant Inspectors and fourteen in Winter.

There have been twenty-four, five nozle non-freezing hydrants, put in on the line of the new 24" and 12" mains, and sixteen non-freezing 2 nozle hydrants were put in, making the total number of these hydrants now in the City, two hundred and fifteen. One four nozle hydrant was put in at the Canadian Pacific grain elevators on Commissioners street, and one East of freight shed on same street. A hydrant should be put in at or near North corner St-Hubert and Ontario streets.

REPAIRS TO SERVICES, &c.

Eighty-one services were broken over drains; ninety-eight couplings were found leaking; fifty six services were burst in house walls; ninety-four stop-cocks were renewed; twenty bows were replaced by 3 way stop-cocks; one hundred and eighty two wooden boxes were replaced by iron ones. Most of the above repairs were made after the Spring flood. In many places the stop-cocks and couplings were pulled and dragged by the effects of the flood; sixty service pipes were found choked; fifty-three services were frozen in the street, these services were not laid deep enough; in some localities the earth freezes seven and sometimes eight feet deep, the pipes being only five feet deep; one hundred and forty-three services were frozen inside houses, also two hundred and twenty-two frozen in the walls. If the cellars are cold, it is due in most cases to the negligence of occupants, in not securing them properly before the winter sets in; in other cases owing to the bad state of the foundations, which are poorly made, and the wind blows through every joint of stone-work, or through the seams of the wood work, when houses are built only on posts. The tenants in the three hundred and sixty-five houses above mentioned could not keep water from freezing unless they allowed it to run in tap all the time, and as soon as they neglected to do that, water froze immediately. One hundred and one old stop-cocks were replaced by pneumatic cocks. This pneumatic cock has given us satisfaction so far, and will be a great improvement on the old kind.

The shut-off water boxes throughout the City are in very bad order, this is greatly owing to their being a long time in use, also to the frequent change of grade of foc'paths. The flag stone footpaths

which every year are repaired and relaid, and in so doing the stop-water boxes are more or less filled with sand or stones, and generally destroyed or covered, so that when they are wanted it is necessary in most cases to break the sidewalk to get at them. In Point St-Charles and in Griffintown, the several floods of the last few years have caused serious expenses in search to find the boxes, as well as the laying of service plates, or covers, which has never been done thoroughly. Flag-stone sidewalks were laid last summer on Notre-Dame and adjacent streets, and stop water boxes were all covered. Had we been warned in due time, we could have made the necessary improvements; as it is now. we only uncover those actually required.

The grade of footpath on Wellington from McGill to the canal was changed and most of the service boxes are now too short ; but if it is to remain planked as at present, I would not recommend anything more done, than putting on plates.

Twelve hundred and ninety new services were put in, with pneumatic-cocks, and one hundred and one replacing old cocks, making the total of these cocks put in this year, thirteen hundred and ninety-one. For years past there were reports of blind leaks, on mains, hydrants and service pipes through the City, those leaks could not be located in day time, therefore it became necessary for night inspections. That I undertook myself, and I have done a most important service as I traced those leaks which were wasting a very large quantity of water. I continued that work at night for about two months, at the end of that time, through exposure, I took sick and as the Winter was near I postponed the inspections until next Summer. I would suggest that an appropriation be granted, enough to cover the cost of such inspection which will be absolutely required next summer, as there is yet a great number of leaks to be found, and which will take at least three months.

For a number of years past, we had two portable steam boilers for thawing hydrants, main pipes, etc., they are also used at fires for thawing cut-offs, hose, ladders and every other apparatus used by Fire Department. I would recommend that a special sum be granted to cover the cost of sending those *steamers* out in day or night time to assist firemen when required, as each time it costs about six dollars. One of those steamers has become useless, and condemned by Boiler Inspector and we will need to replace it.

The fence on Lagauchetiere street at the water works shop needs

renewing. I leave to you Sir, to report on the necessity of having new shops and offices, also dwellings on the department premises, corner Lagauchetiere & St-Chas-Borrommee streets. The City has now grown so large, and the work so accumulated, that I am unable to attend to the requirements of the Department, without a vehicle. I suggest therefore that an appropriation of four hundred dollars per year be granted for that purpose.

REPAIRS TO FOUNTAINS, &c.

A new fountain has been placed in St. Patrick's Square. New cast iron drinking taps, and troughs were put in, on the following streets, corner Sherbrooke & Guy, St-Catherine & Papineau road, Craig & Papineau Square, Mill street at riverside, Ontario & St-Denis, also Viger cattle market. The new troughs put in, were fitted with ball-cocks. The pipe in the stone fountain on Craig street in Victoria Square is broken, and as the stone will have to be taken apart to repair it, I would suggest that a foot of strong masonry be built under, to raise it higher. The pipe inside Custom House Square fountain is also broken, and part of this fountain will need to be taken apart to repair it. The usual repairs will be required on basins in public squares.

Respectfully submitted,

Your obedient servant,

CHAS. LAGACÉ, *Foreman*,

No. 1—Schedule showing the duty of Turbine No. 1.

MONTHS.	Time of pumping.	Revolutions.	Gallons pumped.	Castor Oil.	Tallow.	Coal Oil.	Seal Oil.	Valvoline.	Cotton Waste.	Coal for heating.
	Hrs. M.			IN POUNDS.						
1886										
January	744. 0	546,634	127,365,722	139.50	.....	218.00	.....	.....	26.00	92150
February	622.50	483,716	112,705,828	119..25	55.00	193.00	.....	50.00	26.00	87210
March	744. 0	593,915	138,382,195	126.00	40 00	140.00	.....	60.00	2 5.	94780
April	720. 0	539,198	125,633,134	123.75	40.00	146.00	.....	60.00	23·37	47180
May	744. 0	590,224	137,521,192	132.75	40 00	150 00	.....	20.00	25.75	9950
June	718.40	570,977	133,037,641	128.50	36.00	132.00	.....	....	23.81	....
July	744. 0	600,035	139,808,155	135.00	32.00	136.00	.....	.....	28.75	....
August	383 50	298,121	69,462,193	81.00	45.00	135.00	.....	.....	30.25	....
September	664.20	508,257	118,423,681	121.50	45..00	149.00	40.00	.....	27.43	.....
October	744. 0	539,553	125,715,849	132.75	32 00	175.0	.....	36.00	26.00	34190
November	649.15	462,672	107,802,576	114.75	35.00	184.00	.....	25.00	21.75	62590
December	730.55	551,213	128,432,629	132..75	.....	216.00	....	26.00	24.94	106310
Total	8209.05	6,284,515	1,464,290,995	1487.50	400.00	1974.00	40.00	271.00	309.68	534360
Last year	7787 45	6,010,590	1,400,467,440	1418 81	286.50	1881.00	Cylinder 64..00	105 00	296	517480

No. 3.—

MONTHS.	Engine No. 1.			Engine No. 2.			
	Pumping time.	Revolutions.	Gallons pumped.	Pumping time.	Revolutions.	Gallons pumped.	Pumpir time.
	H. M.			H. M.			H. M
1886							
January	.....	.....	.....	.....	.....	.....	244.1
February	.....	.....	.....	.....	.....	.....	402.5
March	.....	.....	.....	6.45	5,265	963,495	733 5
April	.....	.....	.....	.....	.....	.....	179.1
May	.....	.....	.....	.....	.....	.....	33.0
June	.....	.....	.....	.....	.....	.....	55.2
July	.....	.....	.....	.....	.....	.....	129.1
August	43.20	18977	10,437,350	.....	.....	.....	290.4
September	41 20	24694	13,581,700	.....	.....	.....	145.1
October	8.30	5472	3,009,600	.....	.....	.....	78.4
November	54.10	33338	18,335,900	.....	.....	.....	89.0
December	16.05	14074	7,740,700	.....	.....	.....	206.5
Total	163.25	96555	53,105,250	6.45	5,265	963,495	2588.1

of Turbines Nos. 2 and 3.

...ions ...ped.	IN POUNDS.		
	Castor Oil.	Coal Oil.	Cotton Waste.
,169,656	175 50	218 00	43.00
,380,274	139 50	191 00	27.81
,672,240	72.00	140.00	28.50
,550,170	175 50	146.00	33.00
,783,330	220.50	150.00	28.75
,052,572	198.00	132 00	32.25
,431,030	247.50	136.00	32.37
,378,926	249.75	139.00	32.31
,968,384	240.75	148 00	33 25
,418,952	184.50	175.00	33.62
,900,262	146 25	184.00	32.56
,649,924	148.50	216.00	32.63
,355,720	219 8.25	1975.00	380.05
,357,534	1025.50	1892.50	337.41

No. 1—Schedule showing the duty of Turbine No. 1.

MONTHS.	Time of pumping.	Revolutions.	Gallons pumped.	Castor Oil.	Tallow.	Coal Oil.	Seal Oil.	Valvoline.	Cotton Waste.	Coal for heating.
	Hrs. M.			IN POUNDS.						
1886										
January	744. 0	546,634	127,365,722	139.50	.....	218.00	.....	.....	26.00	92150
February	622.50	483,716	112,705,828	119..25	55.00	193.00	.....	50.00	26.00	87210
March	744. 0	593,915	138,382,195	126.00	40 00	140.00	.....	60.00	2 5.	94780
April	720. 6	539,198	125,633,134	123.75	40.00	146.00	.....	60.00	23·37	47180
May	744. 0	590,224	137,521,192	132.75	40 00	150 00	.....	20.00	25.75	9950
June	718.40	570,977	133,037,611	128.50	36.00	132.00	.....	....	23.81	....
July	744. 0	600,035	139,808,155	135.00	32.00	136.00	.....	.....	28.75	....
August	383 50	298,121	69,462,193	81.00	45.00	135.00	.....	.....	30.25	....
September	664.20	508,257	118,423,681	121.50	45..00	149.00	40.00	.....	27.43	.....
October	744. 0	539,553	125,715,849	132.75	32 00	175.0	.....	36.00	26.00	34190
November	649.15	462,672	107,802,576	114.75	35.00	184.00	.....	25.00	21.75	62590
December	730.55	551,213	128,432,629	132..75	.....	216.00	....	26.00	24.94	106310
Total	8209.05	6,284,515	1,464,290,995	1487.50	400.00	1974.00	40.00	271.00	309.68	534360
Last year	7787 45	6,010,590	1,400,467,440	1418 81	286.50	1881.00	Cylinder 64..00	105 00	296	517480

No. 3.—

MONTHS.	Engine No. 1. Pumping time.	Engine No. 1. Revolutions.	Engine No. 1. Gallons pumped.	Engine No. 2. Pumping time.	Engine No. 2. Revolutions.	Engine No. 2. Gallons pumped.	Pumpir time.
	H. M.			H. M.			H. M
1886							
January....	....	......	....	....	......	....	244.1
February...	....	......	....	....	......	....	402.5
March......	....	......	....	6.45	5,265	963,495	733 5
April......	....	......	....	....	......	....	179.1
May........	....	......	....	....	......	....	33.0
June	....	......	....	....	......	....	55.2
July.......	....	......	....	....	......	....	129.1
August	43.20	18977	10,437,350	....	......	....	290.4
September..	41 20	24694	13,581,700	....	......	....	145.1
October....	8.30	5472	3,009,600	....	......	....	78.4
November..	54.10	33338	18,335,900	....	......	....	89.0
December..	16.05	14074	7,740,700	....	......	....	206.5
Total	163.25	96555	53,105,250	6.45	5,265	963,495	2588.1

d of Turbines Nos. 2 and 3.

llons mped.	Castor Oil.	Coal Oil.	Cotton. Waste.
	IN POUNDS.		
169,656	175 50	218 00	33.00
380,274	139.50	191.00	27.81
672,240	72.00	140.00	28.50
550,170	175.50	146.00	33.00
783,330	220.50	150.00	28.75
052,572	198.00	132 00	32.25
431,030	247.50	136.00	32.37
378,926	249.75	139.00	32.31
968,384	240.75	148 00	33.25
418,952	184.50	175.00	33.62
900,262	146.25	184.00	32.56
649,924	148.50	216.00	32.63
355,720	2198.25	1975.00	380.05
357,534	1025.50	1892.50	337.41

SCHEDULE showing the duty of Engines Nos. 1, 2 and 3.

Engine No. 3.			Total Gallons pumped,	Coal used—pounds.			Average pressure on pump pistons.	Castor Oil.	Coal Oil.	Seal Oil.	Cylinder Oil.	Valvoline.	Cotton Waste
ıg	Revolutions	Gallons pumped.		For pumping.	For banking fires.	To raise 1,000,000 gallons.		IN POUNDS.					
0	150,839	65,765 804	65,765,804	334,600	34,300	5,609	75	22.50	88	32..81	.....	176.00	25.00
5	238,274	103,887,448	103,887,464	546,680	43.470	5,681	75	38.25	128	43.75	....	304.00	15.00
0	369,368	161,044,943	162,007,943	910,800	8,940	5,677	75	69.75	144	70..00	.....	512.00	26.75
0	119,304	52,016,544	52,016,544	272,780	10,370	5,443	75	20.25	40	21.87	.....	144.00	18.00
0	22,664	9,881.504	9,881,504	53,810	8,110	6,266	75	4.50	24	8.75	.....	52.00	10.00
5	39,896	17,394,656	17,394.656	96,390	12,470	6,258	75	6.75	8	.....	.....	48.00	8.00
5	89,944	39,215,584	39,215,584	206,350	24,460	5,886	75	11.25	40	19.81	.....	104.00	10.00
0	189.718	82,717,048	93,154,393	452,990	39,320	5,285	75	38.25	56	8.93	40.62	162.50	22.50
5	99,370	43,325.320	56,907,020	285,910	34,160	5,624	75	22.50	.....	4.37	40.10	89.37	8.00
5	55,748	24,306,128	27,315,728	141,200	19,170	5,871	75	15.75	40	13.31	89.37	.....	8.00
0	60,592	26,418,112	44 754,012	224,490	30,760	5,703	75	24.75	56	13 12	56.87	48 75	20.00
0	139,888	60,991,168	68,731,868	322,400	42,330	5,307	75	26.75	64	31.94	178.75	.....	10.00
5	1,575,605	686,963,780	741,032,525	3,848,400	307,860	5.606	75	301.25	688	268.66	405 71	1620.62	181.25

No. 4.—SCHEDULE showing the duty of High Level Service Engine.

MONTHS.	Pumping time	Revolutions.	Gallons pumped.	Coal used—pounds.			Average pressure on pump pistons.	Casto. Oil.	Valvoline.	Cotton waste.	Coal for heating.
				For pumping.	For banking fires.	To raise 1,000,000 gallons.		IN POUNDS.			
	H. M.										
1886											
January	261. 0	257,120	3,085,440	33,337	7,479	13,229	100	2.00	35	7.00	503
February	232. 0	215,545	2,586,540	30,166	7,147	14,426	100	3.00	26	8.00	823
March	263.30	262,182	3,146,184	32,907	7,630	12,884	100	1.00	28	6.00	
April	221.30	263,540	3,162,480	29,277	6,913	11,412	100	2.00	21	4.00	
May	237.50	300,867	3,610,404	34,371	6,305	11,266	100	2.75	28	4.50	
June	265. 0	335,387	4,024,644	38,131	7,225	11,270	100	1.00	28	5.00	
July	267.15	335,659	4,023,908	39,198	7,299	11,544	100	1.75	32	7.00	
August	348. 0	458,705	5,504,460	50,093	8,149	10,581	100	3.00	30	6.00	
September	325.15	393,085	4,717,020	43,233	7,790	10,816	100	3.00	32	6.00	
October	317.30	440,108	5,281,296	50,996	7,966	11,164	100	3.00	34	10.00	
November	280. 0	383,417	4,601,004	44,616	7,940	11,423	100	3.00	29	3.50	
December	287. 0	381,023	4,572,276	46,083	8,529	11,944	100	2.75	27	4.00	562
Total	3305.50	4,026,638	48,319,656	472,408	90,272	11,615	100	28.25	350	71.00	1888

No. 5.—SCHEDULE showing the depth of water, the rain fall and the average temperature at 9 a.m at McTavish, street Reservoir.

MONTHS.	Average monthly depth in feet.	Rain guages in inches.				Average temperature at 9 a. m.
		Rain.	Snow.	Snow reduced to rain.	Total rain	
1886.						
January	22.30	1.90	19.50	1.17	3.07	11.13
February	22.35	0.55	11.50	1.10	1.65	8.53
March	22.37	0.75	31.25	2.60	3.35	18.00
April	22.10	0.07	5.50	0.58	0.65	38.00
May	22.43	2.19	....	....	2.19	49.09
June	21.70	2.62	.....	.....	2.62	59.60
July	21.78	3.12	.....	.....	3.12	64.35
August	21.64	3.74	.....	.....	3.74	61.19
September	21.95	3.61	.....	.....	3.61	54.17
October	21.69	1.26	0.05	0.05	1.31	43.26
November	22.31	0.56	14.50	3.12	3.68	29.90
December	21.89	0.41	14.00	0.97	1.38	11.16
Total	.....	20.78	96.30	9.59	30.37	37.36
Last year	.....	23.25	37.87	14.25	37.50	37.62

No. 6.—Repairs to Mains, Hydrants and Valves during year 1886.

Description.	12"	10"	6"	4"	Hydrant valves renewed.	Hydrants replaced by non-freezing Hydrants.	Hydrants replaced.	Hydrant rods broken.
Main pipes broken		3	10	33				
Joints blown out..... ..	17	14	17	37				
Stop-valves renewed.....			2	4				
Valve spindles renewed		2	7	14				
					92	12	5	15

Repairs, etc., to Services.

leaking over drains.	Couplings leaking.	Burst in wall.	Cocks renewed.	Bows replaced by 3-way cocks.	Wood'n boxes replac'd by iron ones	Pipes choked.
81	98	56	94	20	182	60

Pipes frozen, etc., during the winter 1885–86.

Service pipes frozen outside.	Pipes frozen inside.	Pipes frozen in wall.	Other Causes.
53	143	222	53

New hydrants put in (5 nozle) with nozle for Steam fire Engines. 24
New patent Hydrants put in during year 1886 16
New patent Hydrants in position up to January 1887 215
Pneumatic cocks put in during year 1886 1391

Hydrants frozen during winter commencing Dec. 1885 ending April 1886.

Dec.	Jan.	Feb.	March.		
64	832	800	820		Total 538 by times.

No. 7.—Comparative Table showing the average daily consumption for each month and for each year from 1877 to 1886 in the City of Montreal,

	1877.	1878.	1879.	1880.	1881.	1882.	1883	1884.	1885.	1886
January.....	8,753,185	8,483,438	8,711,520	8,675,067	9,548,641	8,269,612	10,575,363	9,824,502	10,970,751	12,751,651
February.....	9,492,678	8,748,908	8,825,552	8,892,987	9,126,557	8,669,932	10,745,981	9,882,105	11,674,832	12,570,484
March	8,540,736	8,823,335	9,082,027	9,430,162	9,009,366	9,028,616	10,531,461	9,881,460	11,224,575	12,195,561
April	8,450,236	8,679,603	9,198,983	9,098,494	9,147,791	9,[illegible]24,754	10,356,518	10,030,659	11,542,215	12,8[illegible]6,662
May	8,818,552	8,253,495	9,279,565	9,132,068	9,058,872	8,915,219	9,626 842	10,[illegible]40,086	11,856,877	12,554,388
June	9,706,864	9,773,318	9,487,630	10,238,392	9,674,104	9,3[illegible]6,071	10,566,558	10,885,668	11,882,888	12,982,829
July	10,074,892	10,337,277	10,025,080	10,574,083	10,423,268	10,305,116	11,299,205	11,895,[illegible]14	12,716,836	13,595,315
August.....	10,039,691	9,910,444	10,312,223	11,097,648	10,548,459	10,811,241	11,374,208	11,827,670	12,777,687	13,548,242
September.....	9,615,654	9,112,664	9,753,752	10,720,280	10,981,133	10,787,854	11,038,378	11,656,141	11,750,260	13,543,369
October.....	8,234,079	9,663,996	9,034,211	10,131,764	10,285,658	1[illegible],015,944	11,101,766	11,048,723	12,434,970	12,498,404
November.....	7,844,593	9,116,044	8,270,213	9,230,560	9,093,571	9,796,205	10,091,780	10,343,280	12,495,335	11,181,895
December.....	8,183,582	8,191,048	8,169,285	9,046,544	8,350,180	9,727,230	9,331,761	10,301,871	12,283,395	11,477,885
Daily average for each year.	8,979,512	9,091,131	9,177,504	9,691,901	9,606,295	9,566,759	10,552,174	10,687,037	11,970,504	12,642.957
Inc. over Dec. from preceding year.	 786,749	111,619	86,373	514,397	 85,606	 39,536	985,415	134,863	1,283,467	672,453

No. 8—Schedule showing the different kinds and sizes of Water Meters belonging to the City and to private parties.

KINDS.	Size in inches.	Property of the City.				Private Property.				Grand Total.
		In the City.	Outside the City.	At the Workshop.	Total.	In the City.	Outside the City.	At the Workshop.	Total.	
Gem	10	....	....	1	1	....	....	....	....	1
"	6	4	2	....	6	....	....	....	....	6
"	4	15		3	18	1	....	....	1	19
"	3	37	....	4	41	5	....	....	5	46
"	2	28	....	6	34	4	....	4	8	42
"	1½	9	....	3	12	4	....	1	5	17
"	1	....	....	7	7	....	....	....	....	7
"	¾	5	....	7	12	....	....	2	2	14
"	½	3	....	70	73	1	....	3	4	77
Union	3	....	....	1	1	....	....	....	....	1
"	2	1	....	1	2	1	....	....	1	3
"	1	30	....	1	31	1	....	....	1	32
"	⅝	104	....	23	127	4	....	1	5	132
Rotary Union	4	....	....	2	2	....		....	....	2
"	3	1	....	....	1	....	....	1	1	2
"	2	1	....	1	2	....	....	....	....	2
"	1½	3	....	2	5	....	....	....	....	5
"	1	....	....	3	3	....	....	....	....	3
"	¾	4	....	10	14	....	....	....	....	14
"	⅝	1	....	2	3	....	....	....	....	3
Crown	4	5	1	....	6	....	....	....	....	6
"	3	4	....	....	4	....	....	....	....	4
"	2	7	2	2	11	....	....	....	....	11
"	1½	9	....	3	12	....	....	....	....	12
"	1	23	....	3	26	....	....	....	....	26
"	¾	39	1	3	43	....	....	....	....	43
"	½	39	....	15	54	2	....	....	2	56
"	⅝	....	....	2	2	....	....	....	....	2
Worthington	3	1	....	1	2	....	....	1	1	3
"	2	9	1	2	12	6	....	....	6	18
"	1½	16	....	....	16	1	....	....	1	17
"	1	40	....	7	47	....	....	....	....	47
"	⅝	61	....	7	68	5	....	3	8	76
Continental	⅝	1	....	5	6	....	....	....	....	6
Empire	1	1	....	....	1	....	....	....	....	1
Siemen's	2	....	....	1	1	....	....	....	....	1
"	1	....	....	....	1	....	....	....	....	1
Undine	½	....	....	1	1	....	....	....	....	1
Maxime	1	....	....	....	....	....	....	1	1	1
Lewis	⅝	....	....	1	1	....	....	....	....	1
Equitable	1	....	....	....	....	1	....	....	1	1
"	⅝	....	....	1	1	....	....	....	....	1
Total		501	7	202	710	36	....	17	53	763

No 9.—SCHEDULE showing the Pipes, Hydrants, Valves, Services, etc., laid in the City of Montreal, during the year 1886.

Name of Streets	Length in feet of Cast Iron Pipes.						Number of Valves.							Wrought Iron Pipes.				Hydrants.	Length of Lead Pipes in feet.	Houses supplied.	Brass cocks.	Air cocks.
	24"	12"	10',	6"	4"	Total	24"	12"	10"	8"	6"	4"	Total	2"	1½"	1"	Total					
East Ward.																						
Notre Dame	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	..	36	1	....	1
Champ.de-Mars	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	37	3	....	3
Commissioners	....	....	1610	126	....	1736	....	....	....	..	5	1	6	....	....	....	....	2	24	1	....	1
Barrack	....	....	....	240	....	240	....	....	....	....	1	....	1	....	....	....	....	..	.....	....	....	....
St-Louis	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	58	2	....	2
LeRoyer	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	31	1	....	1
St François	....	....	....	....	....	..	....	....	....	....	....	....	....	....	....	....	....	....	17	1	....	1
St-Paul	....	1400	....	....	....	1400	....	1	....	....	....	....	1	....	....	....	....	4	.....	....	....	....
St-Vincent	....	....	....	....	....	—..	....	....	....	....	....	....	....	....	....	....	....	....	16	1	....	1
Total	....	1400	1610	366	....	3376	....	1	....	....	6	1	8	.....	....	....	....	6	219	10	....	10
Centre Ward.																						
Place d'Armes	210	....	....	....	234	444	1	....	..	.....	....	1	2	....	....	....	....	....	.....	....	..	....
Commissioners	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	..	....	....	22	1	....	1
Fortification	....	....	....	....	....	..	....	....	....	....	....	....	....	....	....	....	..	....	22	1	....	1
St-Frs.-Xav	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....		56	4	....	4
St-James	425	....	....	....	....	425	....	....	....	1	....	....	1	....	..	....	....	1	.....	..	....	....
St-Paul	....	1352	....	....	..	1352	..	2	....	....	....	2	4	....	....	....	....	2	.....	....	..	....
St-Sulpice	620	....	....	....	....	620	1	....	1	3	1	1	7	....	....	....	....	3	.....	....	..	....
Total	1255	1352	....	....	234	2841	2	2	1	4	1	4	14	....	....	....	....	6	100	6	....	6

West Ward.																					
St. James.....	1150	....	....	....	....	1150	....	....	2	3	....	....	5	....	....	....	....	3	22	1	....	1
St. Paul.....	....	1050	....	....	....	1050	....	2	....	....	....	2	4	....	....	....	....	2	.....	....	....	....
St. Peter.....	340	....	....	....	....	340	....	....	2	....	....	....	2	....	....	....	....	....	32	1	....	1
St. Nicholas ...	....	....	....	....	....	..	....	....	....	....	....	....	....	....	....	....	....	..	15	1	....	1
Commissioners	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	37	37	....	.....	1	1	....
Craig	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	26	1	....	1
Hospital	....	....	...	390	....	390	....	....	....	....	....	1	1	...	....	....	....	....	.....	....	...	....
McGill.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	38	1	....	1
St. Alexis.....	....	...	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	40	2	....	2
St. John	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	...	21	1	....	1
Fortification....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	..	40	2	....	2
	1490	1050	....	390	....	2930	....	2	4	3	....	3	12	....	....	37	37	5	234	11	1	10
St. Ann's Ward.																						
Seigneurs	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	26	1	....	1
Notre Dame ..	....	....	....	....	..	....	....	....	....	....	....	....	....	....	23	....	23	....	145	12	1	11
Gill	....	....	....	....	....	.	....	....	....	....	....	....	....	....	....	....	...	....	46	1	....	1
lliam	....	....	....	.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	128	8	1	7
ré	....	....	....	....	....	....	....	....	....	....	....	..	....	....	....	....	...	....	13	2	....	2
hardson	....	....	....	522	....	522	....	....	....	....	....	....	....	....	....	..	....	....	.....	....	....	....
nway.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	...	34	1	....	1
ttawa.....	..	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	250	11	....	11
Queen.....	....	....	....	762	....	762	....	....	....	....	2	....	2	....	....	....	....	....	.....	....	....	....
Wellington....	..	....	....	....	....	.	....	....	....	....	....	....	....	25	....	....	25	....	34	2	1	1
.....	...	....		....	....	....	....	....	....	....	....	....	....	....	: ..	....	....	....	26	1	....	1
..	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	60	4	....	4
.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	119	4	....	4
.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	152	6	....	6
.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	46	1	....	1
..	....	....	....	....	....	....	....	....	....	....	2	....	....	....	....	....	....	....	.....	....	....	....

SEHEDULE showing the pipes, etc.—*Continued.*

Name of streets.	Length in feet of Cast Iron Pipes.						Number of Valves.							Wrought Iron Pipes				Hydrants.	Length of Lead Pipes in feet.	Houses supplied.	Brass Cocks.	Air Cocks.
	24"	12"	10"	6"	4"	Total	24"	12"	10"	8"	6"	4"	Total	2"	1½"	1"	Total					
Brought forward....																						
St. Ann's Ward.																						
Menai	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	79	3	....	3
Mullins	....	....	....	....	54	54	....	....	....	....	....	....	....	....	....	....	....	....	137	4	....	4
College..	....	....	....	....	....	....	....	.....	....	....	....	....	....	....	....	....	....	....	29	1	....	1
Condé	....	....	117	....	....	117	....	....	....	....	....	....	....	....	....	....	....	....	.....	....	....	....
Dalhousie.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	110	7	....	7
Eleonor.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	213	15	....	15
Favard	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	28	2	....	2
Guy	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	.....	....	....	....
Manufacturers..	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	82	4	....	4
Mill	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	...	20	2	1	1
Richmond	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	155	21	....	21
Shearer	....	....	....	1234	....	1234	....	....	....	....	1	....	1	....	....	....	....	....	.....	....	....	....
St. Patrick	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	126	2	1	1
Usher.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	...	31	1	....	1
	....	....	117	2518	54	2689	....	..	....		3	....	3	25	23	....	48	1	2089	116	5	111
St. Antoine. W.																						
Seigneurs.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	...	32	1	..	1
Quesnel	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	195	6	....	6
St. Catherine ..	1000	....	....	....	....	1000	....	....	....	3	....	....	3	....	....	....	....	3	644	29	....	29
Windsor	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	175	2	2	....

Chatham			306	306		1	1		3		
Drummond								116	3	1	2
Peel								302	6		6
Mansfield								182	4		4
St. James			1360	360				284	7		7
Mountain								275	11		11
Cathcart								45	1		1
St. Marc								121	3	1	2
Shuter								422	9		9
McGill Col. Av.								138	4	1	3
University								167	2		2
Versailles			153	153				144	10		10
Guy			324	324				160	7		7
Dorchester								40	2		2
Durocher								44	1		1
Notre Dame								39	3		3
Richmond Sq.								98	10		10
Aqueduct			117	117		1	1	77	2		2
St. Antoine								22	1		1
Fulford								118	3	1	
Dominion								66	8		8
Inspector								18	1		1
Pine Avenue	74	27	18	819	1		1	64	1		1
Richmond								151	10	1	9
Aylmer								27	2		2
Desrivières											
Fort								154	5		5
Latour								32	2		2
MacKay								796	18		18
[illegible]d								16	1		1
								152	6		6
[illegible]								359	6		6
[illegible]											

SCHEDULE showing the Pipes, etc. .—*Continued.*

Name of streets.	Length in feet of Cast Iron Pipes.						Number of Valves.							Wrought Iron Pipes.				Hydrants.	Length of lead pipes in feet.	Houses supplied.	Brass Cocks.	Air cocks.
	24"	12"	10"	6"	4"	Total	24"	12"	10"	8"	6"	4"	Total	2"	1½"	1"	Total					
Brought forward	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
St. Monique	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	240	13	....	13
Sussex Ave	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	69	3	....	3
Bannockburn	....	....	....	....	63	63	....	....	....	....	....	....	....	....	....	....	....	....	60	6	....	6
Burnside	....	....	....	....	140	140	....	....	....	....	....	1	1	....	....	....	....	....	44	1	....	1
Carlton Road	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	150	1	1	....
Chaboillez Sqr.	....	....	....	....	27	27	....	....	....	....	....	....	....	....	....	....	....	1	.....	....	....	....
Chomedy	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	253	4	....	4
Lane off Guy	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	60	5	....	5
Guy Avenue	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	75	8	....	8
Lagauchetière	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	29	1	....	1
Lorne Crescent	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	29	1	....	1
Lusignan	....	....	....	....	261	261	....	....	....	....	....	1	1	....	....	....	....	....	.....	....	....	....
Metcalf	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	102	3	1	2
Oxenden	....	....	....	63	....	63	....	....	....	....	....	....	....	....	....	....	....	....	74	2	....	2
Prince Arthur	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	421	7	....	7
Redpath	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	99	3	....	3
Sherbrooke	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	104	2	....	2
St. Geneviéve	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	74	4	....	4
St. Martin	....	....	....	....	72	72	....	....	....	....	....	....	....	....	....	....	....	....	86	6	....	6
Tupper	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	163	5	....	5
Tower	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	112	2	....	2
	1000	774	....	90	2841	4705	....	....	....	3	1	4	8	....	....		....	6	7919	264	9	255

St. Law. Ward																						
St. Lawrence..	.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	70	6	....	6
St. Chs. Borom	....	....	...	....	....	....	....	....	....	.	....	....	....	....	....	....	...	....	33	1	...	1
Mayor	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	23	1	....	1
Jurors	....	....	....	....	....	....	....	....	....	....	....	....	....	....	23	....	23	....	.....	1	1	....
Bleury.....	2000	....	....	....	12	2012	1	....	2	6	1	2	12	....	....	....	....	6	33	1	....	1
St. Urbain.....	....	100	....	....	...	100	....	....	....	....	....	....	....	....	..	....	....	....	537	16	2	14
St. George	...	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	..	104	7	....	7
Vitré.....	....	....	....	...	....	....	....		....	....	....	....	....	....	....	....	....	....	16	1	...	1
ns.....	....	....	...	....	90	90	....	....	....	....	....	1	1	....	....	....	..	....	120	5	...	5
Catherine..	640	....	....	....	....	640	....	....	....	2	....	....	2	....	....	....	..	1	.....	....	....	....
auchetiere .	....	....	....	....	..	....	....	....	....	....	....	....	....	....	..	....	....	....	31	1	....	1
t Avenue..	....	....	....	36	....	36	....	....	....	....	...	....	....	...	...	....	...	....	121	4	....	4
Bernard....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	20	1	....	1
chester.....	....	....	....	...	....	....	....	....	....	....	....	....	....	....	....	....	....	....	24	1	....	1
ocher	....	....	...	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	66	4	....	4
mance.....	....	....	....	594	....	594	....	....	....	....	....	....	....	....	....	....	....	....	476	17	....	17
St. Philippe....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	128	4	....	4
Guilbault	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	71	4	....	4
	..	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	106	4	....	4
	..	852	....	478	18	1348	....	...	....	....	....	....	....	...	...	...	....	1	.....	....	....	....
	..	....	....	....	....	....	....	..	....	....	....	....	....	....	....	...	....	....	278	9	....	9
	40	952	....	1108	120	4820	1	....	2	8	1	3	15	....	23	....	23	8	2257	88	3	85
.....	....	523	....	508	18	1049	....	1	...	....	1	....	2	87	....	....	87	3	498	30	2	29
.....	....	....	....	389	18	407	...	....	....	....	....	....	....	....	....	....	...	1	1366	69	....	69
.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	236	14	...	14
Avenue .	....	....	....	....	....	..	...	...	....	....	....	....	....	....	....	....	....	....	72	2	....	2
.....	....	....	....	9	....	9	....	....	....	....	....	....	....	....	....	....	....	....	135	2	....	2
ried ove ...	....	...	....	....	....	....	....	....	....	..	...	...	....	80	....	....	..	....	.....	....	....	....

SCHEDULE showing the pipes, etc—*Continued.*

Name of streets.	Length in feet of Cast Iron Pipes.						Number of Valves.							Wrought Iron Pipes.				Hydrants.	Length of Lead Pipes in feet.	Houses supplied.	Brass Cocks.	Air Cocks.
	24"	12"	10"	6"	4"	Total	24"	12"	10"	8"	6"	4"	Total	2"	1½"	1"	Total					
Brought forward....	....	...	....	....	..	....	....	....	....	....	....	....	....	....	....	....	....	....	.....	....	....	....
St. J.-Bte. Ward.																						
St. Lawrence...	....	284	360	....	18	662	....	....	....	....	....	....	....	....	....	....	....	1	1263	74	....	74
St. Urbain.....	....	1031	....	....	9	1040	....	1	....	....	....	1	2	....	....	....	....	2	134	6	....	6
Total.....	....	1838	360	906	63	3167	....	2	....	....	1	1	4	87	....	....	87	7	3704	197	2	197
St. Louis Ward.																						
St. Hypolite...	....	..	....	....	....	..	....	....	....	....	....		....	....	....	....	....	....	232	14	1	13
German.....	....	....	....	....	....	....	..	..	..	..	..	..	..	....	....	....	....	....	451	23	....	23
Sanguinet.....	....	....	....	270	....	270	....	....	....	....	.	....	..	....	....	....	....	....	277	15		15
St. Dominique.	..	....	....	....	....	....	..	....	....	....	....	....	....	....	....	....	....	....	158	9	....	9
St. Denis ..	....	....	....	....	....	....	..	..	....	....	....	....	....	....	....	....	....	....	65	1	....	1
St. Constant ..	....	....	....	....	....	....	..	..	....	....	....	....	....	....	....	....	....	....	210	9	....	9
Albina.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	141	6	....	6
Drolet.....	....	....	....	....	..	....	....	....	....	....	....	....	....	....	....	....	....	....	396	23	....	23
Laval Avenue..	....	....	....	....	.	....	....	....	....	....	....	....	....	....	....	....	....	....	576	18	....	18
St. Lawrence...	....	....	....	....	....	....	....	....	....	....	....		..	....	....	....	....	.	31	2	....	2
Cadieux.....	....	....	....	....	..	....	....	....	....	....	....	....	....	....	....	....	....	....	470	15	....	15
St. Elizabeth...	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	168	8	....	8
Ernest.....	....	....	....	....	....	....	..	....	....	....	....	....	....	....	....	....	....	....	21	1	....	1
Ontario.....	....	....	....	....	....	....	..	....	....	....	....	....	....	....	....	....	....	....	128	4	....	4

St. Catherine...	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	27	1	....	1
Vitré.....	....	....	....	1494	....	1494	....	....	....	....	4	....	4	....	....	....	....	....	27	1	....	1
Dufaulx.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	58	4	....	4
Fortier	....	....	....	....	195	195	....	....	—	....	....	1	1	....	....	....	....	....	251	11	....	11
Lagauchetiére..	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	31	2	....	2
Perrault Lane .	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	40	2	....	2
Emery	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	90	4	....	4
Marie Louise L,	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	38	1	1	....
Total.....	...	....	...	1764	195	1959	....	....	....	...	4	1	5	....	....	....	....	....	3889	174	2	172
St. James Ward.																						
Montcalm.....	....	....	....	....	...		....	....	....	....	....	....	....	....	....	....	....	....	397	30	....	30
Rivard.....	....	..	....	140	....	140	....	....	....	....	....	....	1	....	....	....	....	....	178	8	....	8
Berri.....	....	....	...	723	....	723	....	....	....	....	1	..	1	....	....	....	....	1	460	13	...	13
Jacq-Cartier ..	....	....	....	...	....	....	....	...	....	....	.	.	....	305	....	...	305	....	233	13	1	12
Amherst.....	....	....	....	...	....	..	....	....	....	....	....	....	....	..	....	....	....	....	113	6	....	6
Montana.	....	...	....		....	....	....	....	....	....	....	....	....	..	....	....	....	....	102	6	....	6
Beaudry	....	....	....	....	....	...	....	....	....	....	....	....	....	....	....	....	....	....	48	6	....	6
Ontario	.....	....	....	....	....	..	....	....	....	....	....	....	....	....	....	....	....	....	134	11	....	11
St. André.. ..	...	....	....	....	....	....	....	....	....	....	....	....	....	..	....	...	.	...	172	7	....	7
Craig	....	....	....	....	944	944	....	....	....	....	....	2	2	....	....	....	....	....	60	1	....	1
Mignonne.....	....	....	....	....	....	....	....	....	....	..	..	....	....	....	....	....	....	....	45	1	....	1
Campeau.....	....	....	.	....	63	63	....	....	....	....	....	1	1	....	....	....	....	..	.....	....	....	....
St. Christophe	....	....	...	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	39	4	....	4
	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	120	4	..	4
	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	134	6	....	6
	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	224	4	....	4
Lagauchetière .	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	74	4	....	4
Cherrier	....	....	....	376	....	376	....	....	....	....	1	....	1	..	....	.....	....	....	308	8	....	8
Dorchester.....	....	...	....	...	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	46	2	...	2
Carried over.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	.....	....	0	....

SCHEDULE showing the pipes, etc.—*Continued.*

Name of streets.	Length in feet of Cast Iron Pipes.						Number of Valves.							Wrought Iron Pipes.				Hydrants.	Length of Lead Pipes in feet.	Houses supplied.	Brass Cocks.	Air Cocks.
	24"	12"	10"	6"	4"	Total	24"	12"	10,"	8"	6"	4"	Total	2"	1½"	1"	Total					
Brought forward....	....	....	....	..	....	....	....	....	....	....	....	....	....	...	....	....	....	..	.....	....	....	....
St. James Ward..																						
Maple.....	..	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	83	2	....	2
Wolfe	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	63	3	....	3
Grant.....	....	....	....	337	....	337	....	....	....	....	1	.. ..	1	....	....	....	....	1	52	2	....	2
Rousseau.....	....	...	....	....	....	....	....	....	..	....	....	....	....	....	....	...	....	....	16	1	....	1
St. Denis.....	....	....	..	....	....	....	....	....	....	. ..	....	....	....	....	....	....	....	....	50	2	. ..	2
Sherbrooke	....	....	....	....	....	....	....	....	....	. ..	....	....	....	....	....	....	....	. ..	174	4	....	4
Water.....	....	....	....	....	....	....	....	....	....	.. ..	....	....	....	...	....	....	....	....	106	5	....	5
Total	....	....	....	1576	1007	2583	....	....	....	....	3	3	6	305	....	....	305	2	3431	153	1	152
St. Mary Ward.																						
De Maisonne've	....	....	....	....	...	....	....	....	....	....	....	....	....	....	....	....	....	....	269	17	....	17
Champlain....	....	....	....	...	....	....	....	....	....	....	...	....	....	....	....	..	....	....	155	6	...	6
Fullum	....	....	....	....	...	....	....	....	....	....	....	....	....	. ..	....	....	...	....	38	2	....	2
Shaw	....	..	....	....	97	97	...	....	...	....	....	1	1	14	....	....	14	....	160	9	2	7
St. Catherine...	....	....	....	....	....	....	..	....	....	....	....	....	....	....	....	....	....	....	208	7	....	7
Ontario.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	205	9	...	9
Voltigeurs	....	....	....	....	....	....	....	....	....	....	....	....	....	...	....	.....	....	....	76	4	....	4
Gnin	....	....	..	....	545	545	.. .	....	....	....	....	1	1	....	...	....	....	....	225	12	. .	12
Archambault:..	....	....	....	....	....	...	....	....	....	....	....	....	....	....	....	....	....	....	121	8	....	8
Panet.....	....	....	..	....	....	....	....	....	....	....	....	....	....	....	. ..	....	....	....	247	15	....	15
Plessis.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	..	....	....	398	16	....	16

Parker lane					130	130						1	1										
Papineau Road																			315	10	1	9
Lagauchetière																			70	3		3
Mignonne					150	150													560	24	1	23
Dorchester																			279	15		15
DeLorimier																			209	5		5
Morin Lane																			54	4		4
Craig					1225	5225						2	2						64	2		2
Dufresne																			310	20		20
Iberville																			255	12		12
Parthenais																			96	4		4
Poupart					15	150													49	4		4
St. Rose																			113	5	1	4
[illegible]																			218	13		13
[illegible]																			64	4		4
[illegible]																			104	2		2
[illegible]ne																			49	1		1
[illegible]																			129	3		3
[illegible]					2297	2297						5	8	14			14		5040	236	5	231
Fd.																						
[illegible]																			199	7		7
[illegible] Catherine																			345	17		17
[illegible]reau					1840	1840												1	103	7		7
[illegible]ugh																			64	2		2
[illegible]																			31	2		2
[illegible]ne																			52	2		2
[illegible]ain L				325		325													137	6		6
[illegible]ac				599		599					1		1						307	13		11
[illegible]ézéry																			58	3		3
Notre Dame												1	1						308	8		8
Ontario				325		325					1		1						124	4	2	2
Total				1249	1840	3089					½	1	3					1	1728	71	2	67

SCHDULE showing the pipes, etc.—*Continued.*

RECAPITULATION.

Wards.	Length in ft. of Cast Iron Pipes.						Number of Valves.							Wrought Iron Pipes.				Hydrants.	Length of Lead Pipes in feet.	Houses supplied.	Brass Cocks.	Air Cocks.
	24"	12"	10"	6"	4"	Total.	24"	12"	10"	8"	6"	4"	Total	2"	1½"	1"	Total					
East	....	1400	1610	366	....	3376	....	1	....	....	6	1	8	...	....	....	....	6	219	10	....	10
Centre	1255	1352	....	...	234	2841	2	2	1	4	1	4	14	....	....	....	....	6	100	6	....	6
West	1490	1050	....	390	....	2930	....	2	4	3	....	3	12	....	...	37	37	5	234	11	1	10
St. Ann	....	.	117	2518	54	2689	....	....	....	....	3	....	3	25	23	....	48	1	2089	116	5	111
St. Antoine	1000	774	...	90	2841	4705	....	....	....	3	1	4	8	....	....	....	....	6	7919	264	9	255
St. Lawrence	2640	952	....	1108	120	4820	1	....	2	8	1	3	15	....	23	....	23	8	2257	88	3	85
St. Jean-Bte	....	1838	360	906	63	3167	....	2	....	....	1	1	4	87	....	....	87	7	3704	197	2	196
St Louis	....	....	....	1764	195	1959	....	....	....	....	4	1	5	....	....	....	....	....	3889	174	2	172
St. James	....	...	....	1576	1007	2583	....	....	....	....	3	3	6	305	....	....	305	2	3431	153	1	152
St. Mary	..	....	....	....	2297	2297	....	....	....	....	....	5	5	14	....	....	14	. ..	5040	236	5	231
Hochelaga	....	....	....	1249	1840	3089	....	....	....	....	2	1	3	....	....	....	....	1	1728	71	2	67
Totals	6385	7366	2087	9967	8651	34456	3	7	7	18	22	26	83	431	46	37	514	42	30610	1326	30	1295

No. 10.— SCHEDULE showing the Pipes, Hydrants and Valves laid down and the number of houses supplied with water in the City of Montreal up to 1st January 1887.

WARDS.	MAIN PIPES.												VALVES.										Hydrants.		Services
	30	24	16	12	10	8	6	4	3	1½	Total.	Lead Pipes.	30	24	16	12	10	8	6	4	3	2½	Total.	Public.	Private.	
[illegible]	....	....	....	1400	5483	290	2323	7549	713	80	17838	.....	....	....	..	1	5	1	13	30	2	..	52	38	1	766
[illegible]	....	255	....	1352	3281	22	3706	6626	161	55	16438	165	....	2	..	2	5	4	11	29	7	..	60	26	2	587
[illegible]	....	490	654	2006	5024	678	5537	8209	585	....	24183	....	..	....	1	4	14	4	11	32	18	..	84	41	....	809
[illegible]	....	....	....	6786	19492	615	25467	54730	53	....	107336	1231	....	....	..	12	24	1	40	100	3	1	181	156	15	3611
	1340	2272	1940	27760	10992	343	34083	106802	523	442	186199	247	1	4	1	32	14	5	57	183	5	..	302	246	6	6275
	2135	2640	....	2626	4241	3273	18499	25259	....	....	58673	694	..	1	..	1	4	11	35	45	1	..	98	87	....	2878
	....	....	....	1838	860	....	906	63	....	....	3167	....	....	....	..	2	....	..	1	1	....	..	4	7	....	197
	1645	....	....	93	11190	1630	19395	32410	....	..	66363	3162	1	....	..	2	9	1	27	52	....	..	92	88	....	3430
..	2488	....	....	60	2390	....	31178	43314	....	....	79430	620	1	....	..	2	2	1	37	69	....	..	112	106	2	5341
...	2585	5040	100	52	8338	....	46623	39727	60	....	102525	2679	1	2	1	3	11	..	60	64	1	..	143	111	6	5017
....	.....	.....	....	.....	6165	....	10612	15614	....	....	32391	455	....	..	..	.	3	..	7	17	1	..	28	35	..	967
.....	10193	12697	2694	43973	77156	6853	198349	340276	2095	557	694843	11381	4	9	3	61	91	28	299	622	38	1	1156	941	32	29978
ain.....	13360	26606		1674	.....	....	15	.....	....	....	41655	.....	9	23	1	2	....	..	2	...	....	..	37	....	....	3
rounds	.....	.....	....	.....	.....	....	.....	5484	....	....	5484	....	....	....	..	....	....	....	....	....	3	..	3	4	....	.....
R., Point St	.....																									
ies.....	.....	.....	....	.....	.....		7737	1861	....	....	9598	.....	..	....	..	....	....	....	....	....	....	..	....	....	20	.....
Grand Total.	23553	39303	2694	45647	77156	6853	206101	347621	2095	557	751580	11381	13	32	4	63	91	28	301	625	38	1	1196	945	52	29981

No. 11.—SCHEDULE showing the average pressure in the City Mains during the year 1886.

MONTHS.	At W. Work's Shop Lagauchetière, st., cor. of St. Charles Borromée.	Central Fire Station Craig street.	Fire Station No. 2, St. Gabriel street.	Fire Station No. 3, Wellington street.	Fire Station No. 4, Chaboillez Square.	Fire Station No. 5, St. Catherine street.	Fire Station No. 6, Ontario street.	Fire Station No. 7, Dalhousie. Square.	Fire Station No. 8, Craig street.	Fire Station No. 9, Centre street.	Fire Station No. 10, St. Catherine st.	Fire Station No. 11, Ontario street.	Fire Station No. 12, Seigneurs street.	Fire Station No. 13, Desery street.	Surface of water in McTavish Reservoir.
Height above datum ..0..	42 00	32 00	57.00	27.00	.....	97 00	66.00	70.50	43.00	26 00	130.00	70.00	36.00	14.00	205..00
1886															
January.....	65.00	72..00	51.00	75.00	.....	45.00	59.00	53 00	70,00	66.00	30.00	66 00	67.00	67.00	
February	65 00	72.00	52.00	72.00	.....	45.00	57.00	51.00	67.00	67 00	30 00	66.00	67 00	66.00	
March.....	65.00	73.00	53.00	75 00	.....	45.00	58·00	51.00	71 00	67 00	30.00	66.00	67 00	67 00	
April	65.00	72.00	57 00	66 00	.....	45.00	57.00	51.00	70.00	67.00	30.00	66.00	67 00	66 00	
May.....	65.00	72.00	58.00	66 00	76.00	45.00	58 00	52.00	69.00	66 00	30.00	66 00	67.00	66.00	
June	65.00	72 00	54.00	69.00	75.00	46.00	58.00	52.00	69.00	67.00	30.00	67 00	67.00	66.00	
July.....	65.00	72.00	55.00	70 00	74.00	46.00	59.00	52.00	69.00	68.00	30.00	65.00	65 00	66.00	
August	65.00	72 00	54.00	70 00	74.00	46.00	57.00	52.00	70.00	69 00	30.00	66 00	67 00	66.00	
September ...	65.00	72.00	50.00	71.00	75.00	46.00	58.00	52.00	70.00	67.00	30.00	65.00	67.00	65.00	
October.....	65.00	73 00	40 00	73.00	75.00	46.00	56.00	52.00	70.00	69.00	30.00	65.00	67.00	66 00	
November....	65.00	73.00	.....	75.00	76.00	46.00	56.00	53.00	70.00	69.00	30.00	66.00	67 00	65.00	
December	65.00	76.00	62.00	77.00	79.00	46.00	56.00	57 00	69.00	71.00	30.00	66.00	72.00	66.00	
Average 1886.	65.00	73.00	53.00	72.00	75.00	46.00	57.00	52.00	69.00	68.00	30.00	66.00	67.00	66.00	
" 1885	65.00	72.00	56.00	75.00	73.00	44.00	54.00	53.00	71.00	68.00	30.00	66.00	67.00	68.00	

MONTREAL WATER WORKS.

No. 11½.—SCHEDULE showing the positions of Fire Hydrants actually in use in the City of Montreal, their Elevations above Datum, the head of water, pressure at each and the size of supply pipe, the Elevation of reservoir McTavish being 205 feet and that of the Peel street reservoir 418 feet.

* Those marked with an asterisk take their supply from Peel street reservoir.

STREETS.	Where Hydrants situated.	Size of supply main.	Elevation above Datum in feet.	Head of Water in ft.	Hydrant pressure in lbs. per sq in.	
					Oct. 1886	Apl. 1887
Albert	Opposite Maple Lane	6	19	186	66	76
"	Near south corner Fulford	4	26	179	.....	65
Amherst	Between Dorchester and St. Catherine	4	47	158	60	61
"	Corner Mignonne	6	64	141	.....	59
"	Near opposite Robin	6	60	145	58	61
"	Near Ontario	6	60	145	55	61
"	Between Ontario and Sherbrooke	6	81	124	.....	59
"	Corner Cherrier	6	117	88	.....	40
Anderson	Between Lagauchetière and Dorchester	4	46	159	60	69
Ann	At lower Bend	4	22	183	66	75
"	Between Wellington and Ottawa	4	21	184	66	73
Aqueduct	Opposite Rolland	4	20	185	66	70
"	Corner St. Antoine	4	56	149	56	60
"	Corner Overdale Avenue	4	85	120	41	40
Archambault	About 250 feet east of Morin	4	.....	.....	.....	65
Argyle Avenue	Between Aqueduc and Mount St. Mary Avenue	4	71	134	46	54
"	At end (west)	4	71	134	51	54
Aylmer	Opposite Mayor	4	92	113	47	48
"	Between Berthelet and Sherbrooke	4	98	107	45	47
Baile	Corner St. Mark	4	31	174	31	33
Balmoral	Between St. Catherine and Ontario	4	89	116	44	51

Barrack	Corner St. Paul	6	53	152	61	66
Barré	East of Versailles	4	23	182	64	65
"	West of Lusignan	4	26	179	66	70
Basin	Corner Richmond	10	23	182	.....	70
Beaudry	Between Dorchester and St. Catherine	4	44	161	65	69
"	Above Mignonne	4	65	140	55	59
"	Corner Robin	4	63	142	58	61
"	Corner Ontario	4	64	141	60	61
"	Above Ontario	4	68	137	54	32
Beaver Hall Hill	Corner Jurors	16	30	175	.....	76
"	Corner Belmont	6	72	133	53	61
Belmont	Opposite Brunswick	6	80	125	.....	56
"	Corner St. Geneviève	6	84	121	42	56
Berri	Below St. Catherine	4	52	153	61	65
"	Corner Sherbrooke	6	110	95	.....	40
"	Between Cherrier and Roy	6	123	82	.....	35
Berthelet	Between Bleury and City Councillor	4	91	114	.....	56
Bleury	Near Corner Craig	24	24	181	82	74
"	Corner Jurors	24	27	178	77	77
"	Near Corner Lagauchetière	24	36	169	73	73
"	Corner Dowd	6	47	158	65	71
"	Near opposite Dowd	24	49	156	67	66
"	Opposite Jesuit College	24	70	135	62	56
"	Below St. Catherine	6	84	121	43	56
"	Corner Ontario	8	86	119	52	53
"	Opposite Concord	8	95	110	45	47
Bonsecours	Corner Notre Dame	10	65	140	.....	64
"	Corner St. Louis	10	.....	.....	.....	71
Bourgeois	Between Leber and Favard	4	21	184	.....	71
Britannia	Corner Menai	4	21	184	65	71
"	Corner St. Etienne	4	22	183	65	71
Bronsdon	At upper end	4	50	155	.....	60
Cadieux	Corner Sherbrooke	6	121	84	.....	35
"	Between Sherbrooke and Courville	6	123	82	35	36
"	Above Courville	6	126	79	31	34

STATEMENT of the positions of Fire Hydrants, etc.

STREETS.	Where Hydrants situated.	Size of supply main.	Elevation above Datum in feet.	Head of Water in ft.	Hydrant pressure in lbs. per sq. in.	
					Oct. 1886	Apl. 1887
Cadieux	Between Courville and Roy	6	126	79	31	32
"	Corner Roy	6	125	80	34	32
"	" St. Jean Baptiste	6	140	65	.....	.....
"	Between St Jean Baptiste and Rachel	6	148	57	.....	.....
Campeau	Opposite Rousseau	4	49	156	60	66
"	Corner Dubord	4	32	173	68	72
Can. Pacific Ry., Stock yards.	(1) Hydrant No. 1	6	.....	.....	55	63
" "	(2) " No. 2	6	.....	.....	55	64
" "	(3) " No. 3	6	.....	.....	60	.....
" "	(4) " No. 4	6	.....	.....	55	.....
Canning	Between Notre Dame and G. T R. Track	4	26	179	66	66
"	" St. James and St. Antoine	4	25	180	66	70
Carleton Road	* At McGill College Observatory	4	167	251	.....	115
Cathcart	Corner Ste. Monique	4	87	118	51	56
Cathedral	Near Albert	4	20	185	66	76
Centre	Near opposite Montmorenci	4	21	184	66	71
"	At Fire Station	4	20	185	66	71
"	Near corner Shearer	4	20	185	66	71
"	Corner St Francis	4	20	185	66	71
Champlain	" St. Rose	4	41	164	68	71
"	Between Lafontaine and Ontario	4	56	149	60	61
"	" Ontario and Sherbrooke	4	78	127	52	56
Champ de Mars	" Lacroix and Bonsecours	4	47	158	.....	66
"	" Bonsecours and Gosford	4	44	161	.....	71
Charlotte	South corner St. Constant	4	60	145	.....	59
Chatham	Near corner Hunter	4	27	178	61	65
"	Near G. T. R. Track	4	25	180	66	72

Chatham	Between St. James and St. Antoine	4	25	180	66	70
Chenneville	Corner Vitré	6	26	179	70	76
"	Near corner Lagauchetière	6	38	167	60	76
"	At Dufferin Square	4	51	154	58	66
Cherrier	Corner St. Hubert	6	121	84	34	35
Chomedey	" St. Luke	4	127	78	31	35
City Councillors	" Berthelet	4	92	113	49	51
Colborne	" Common	6	24	181	67	75
"	Near East corner Wellington	6	25	180	66	71
"	Corner Smith	6	20	185	68	73
College	" St. Henry	4	20	185	66	71
"	" Dupré	4	22	183	66	71
"	Between Dupré and Inspector	4	20	185	66	70
"	Corner Chaboillez	4	19	186	71	71
Commissioners	North end C. P. R. freight shed	10	33	172	64	76
"	At Elevator C. P. R. yard	10	31	174	71	71
"	Corner Barrack	10	30	175	71	76
"	" Friponne	10	22	183	71	76
"	" Victor	6	21	184	71	76
"	At Centre of Bonsecours Market	6	20	185	71	76
"	At West end "	6	20	185	71	76
"	Corner Jacques Cartier square	6	21	184	66	76
"	Near St. Gabriel	6	20	185	61	76
"	Near corner St. Jean Baptiste	6	20	185	71	75
"	Near St. Sulpice	6	20	185	70	74
"	Near Custom House square	6	20	185	70	74
"	At Custom House square south	6	21	184	69	74
"	Corner St. Francois Xavier	6	20	185	69	75
"	" St. Peter	6	20	185	68	75
"	Between St. Peter and McGill	6	20	185	67	74
Common	Corner Port	4	20	185	66	75
"	Between Port and St. Peter	4	20	185	66	73
"	Corner St. Peter	4	21	184	66	71
"	Near corner McGill	6	21	184	66	76
"	Corner Grey Nun	6	20	185	66	76

STATEMENT of the positions of Fire Hydrants, etc.

STREETS.	Where Hydrants situated.	Size of supply main.	Elevation above Datum in feet.	Head of Water in ft.	Hydrant pressure in lbs. per sq. in.	
					Oct. 1886	Apl. 1887
Common	Corner King	6	21	184	66	76
"	" Queen	6	21	184	66	75
"	" Duke	6	22	183	68	75
"	" Nazareth	6	22	183	67	76
"	" Dalhousie	6	22	183	71	75
Condé	Near opposite Richardson	4	20	185	69	71
Congregation	Near corner Leber	4	20	185	65	66
"	Corner Favard	6	26	179	65	71
Conway	" St. Etienne	4	23	182	65	71
"	Near the river	4	18	187	65	71
Cote des Neiges Road	* Corner Summerhill	6	.....	.....	.....	100
" " "	* Near McGregor	6	235	183	86	84
" " "	* Above Pine Avenue at Bend	12	330	88	41	42
Off Cote des Neiges Road	* Rear Montreal College	6	.....	.....	.....	110
" " "	* " "	6	.....	.....	.....	110
Coté	Opposite Theatre Royal	6	25	180	65	75
Coursol	About 150 feet east of Dominion	4	32	173	.....	65
Courville	Corner St. Hypolite	4	128	77	35	32
Craig	" Gain	6	37	168	73	73
"	" Adolphus	6	35	170	65	71
"	" St. Ignace	6	35	170	65	71
"	" De Salaberry	6	33	172	70	71
"	" Panet	6	34	171	67	71
"	" Visitation	6	32	173	.....	71
"	" Montcalm	6	31	174	65	71
"	" Wolfe	6	31	174	65	71
"	Between Amherst and Jacques Cartier	6	32	173	65	76

Craig	Corner Campeau	6	32	173	65	76
"	" St. Hubert	6	29	176	65	76
"	" Berri	6	30	175	69	76
"	" Sanguinet	8	28	177	66	75
"	" St. Elizabeth	8	26	179	67	71
"	" St. Constant	8	29	176	66	74
"	" St. Dominique	8	28	177	60	70
"	" St. Lawrence	8	29	176	66	79
"	" St. Charles Borromée	8	26	179	65	74
"	" St. Urbain	8	25	180	66	79
"	" Coté	8	25	180	65	75
"	" Chenneville (Fire Station)	8	23	182	68	75
"	" St. George	8	23	182	70	77
"	" Bleury	8	24	181	71	78
"	" Hermine	8	23	182	70	78
"	At Victoria square	8	24	181	66	75
"	South corner Victoria square	8	25	180	.....	76
"	Corner Busby	6	22	183	71	71
Crescent	Between Dorchester and St. Catherine	4	106	99	41	44
Dalhousie	Corner Brennan	4	22	183	66	73
"	Between Wellington and Ottawa	6	20	185	66	75
Bresolles	Opposite St. Dizier	6	27	178	61	70
isle	East of Fulford	4	30	175	66	69
'	West corner Fulford	4	30	175	66	65
orimier Avenue	About 100 feet above Craig	6	42	163	.....	70
" "	South corner Dorchester	6	43	162	.....	70
" "	Corner Kent	6	40	165	65	70
" "	About 30 feet below St. Catherine	6	38	167	.....	70
" "	Corner Lafontaine	6	55	150	60	64
" "	Between Ontario and Lafontaine	6	55	150	65	65
"	Corner Ontario	6	60	145	60	60
	At Kennels above Ontario	6	69	136	58	60
	About 200 yards below Rachel	6	123	82	30	35
	In C. P. Ry. Shops yard north	6	41	164	65	68
	" " south	6	41	164	65	70

STATEMENT of the positions of Fire Hydrants, etc.

STREETS.	Where Hydrants situated.	Size of supply main.	Elevation above Datum in feet.	Head of Water in ft.	Hydrant pressure in lbs. per sq. in.	
					Oct. 1886	Apl. 1887
Dézéry	Corner St. Catherine	6			64	70
"	" Logan	6			65	70
"	Midway between Logan and Ontario	6			65	70
"	Corner Ontario	6			57	70
Desrivières Avenue	At west end of avenue	4	35	170	71	71
Donegani	" of street	4	64	141		61
Dorchester	About 120 feet east of Shaw	10	33	172	65	70
"	Corner Gain	10	32	173	70	74
"	" Papineau square	10	34	171	72	73
"	" Champlain	10	38	167		72
"	" Maisonneuve	10	41	164	65	61
"	" Plessis	10	39	166	69	70
"	" Panet	10	34	171	72	73
"	" Visitation	10	37	168	68	72
"	Between Beaudry and Montcalm	10	39	166	70	68
"	Corner Wolfe	10	42	163	65	72
"	Between Amherst and Jacques Cartier	10	47	158	65	67
"	Opposite St. André	10	56	149	60	62
"	Corner St. Hubert	10	54	151	62	65
"	" Berri	10	57	148	60	65
"	" Sanguinet	10	47	158	60	55
"	" St. Elizabeth	10	55	150	56	64
"	" German	10	58	147		60
"	" St. Charles Borromée	10	53	152	60	68
"	Opposite St. Philippe	10	51	154	60	71
"	Corner St. George	10	58	147	60	66
"	" Bleury	10	62	143	60	60

orchester	Between Alexander and Beaver Hall	10	86	119	45	53
"	At Phillips square	10	88	117	.....	49
"	Corner Hanover	10	94	111	45	50
"	" St. Monique	10	96	159	45	51
"	" Mansfield	12	95	110	45	48
"	At Dominion square	12	94	111	45	50
"	About 30 feet west of Windsor	12	93	112	.....	48
"	Corner Drummond	12	93	112	46	48
"	" Aqueduct	12	104	101	41	44
"	Near opposite Mackay	12	108	97	41	46
"	Corner Guy	12	107	98	41	41
"	Between Guy and St. Mathew	12	110	95	38	41
"	Opposite about 150 feet west of St Mathew	12	117	88	38	34
"	Corner Seigneurs	12	126	79	31	33
"	West of Fort	6	128	78	31	33
"	Off street to A. W. Ogilvie's grounds	4	128	77	.....	30
"	Near Essex Avenue	6	125	80	26	34
Drolet	Between St. Jean Baptiste and Roy	6	122	83	31	32
"	Just below St. Jean Baptiste	6	128	77	.....	32
Drummond	Between Dorchester and St. Catherine	4	95	110	44	45
"	" St. Catherine and Sherbrooke	6	117	88	36	38
"	*About 120 yards above Sherbrooke	4	149	269	81	83
"	*100 yards below head of street	4	209	209	86	90
"	*At head of street (H.)	4	252	166	76	85
Dubord	Between Campeau and St. Hubert	4	31	174	.....	70
"	Corner Berri	4	32	173	66	70
Dufresne	" Grant lane	6	40	165	65	60
"	" St. Roch	6	39	166	69	78
"	Below Ontario	6	38	167	70	70
Duke	Between Brennan and Wellington	4	21	184	69	75
"	Just above Sherbrooke	4	125	80	35	37
"	Between Sherbrooke and Prince Arthur	4	127	78	35	41
"	About 40 feet above Prince Arthur	4	130	75	31	36
"	Between Ottawa and William	4	19	186	66	71
"	Opposite Barré	4	18	187	66	71

STATEMENT of the positions of Fire Hydrants, etc.

STREETS.	Where Hydrants situated.	Size of supply main.	Elevation above Datum in feet.	Head of Water in ft.	Hydrant pressure in lbs. per sq. in.	
					Oct. 1886	Apl. 1887
Essex	Near corner Quiblier	4	125	80	.....	40
Farm	Between Wellington and St. Patrick	4	22	183	65	73
Forfar	" Menai and the River	6	23	182	68	71
"	Corner Menai	6	23	182	68	71
"	" St. Etienne	6	23	182	68	71
Fort	Near opposite Bayle	6	128	77	31	34
"	Corner St. Luke	4	129	76	31	34
Fortier	" St. Constant	4	93	112	42	43
Fortification	" St. Lambert Hill	6	38	167	60	68
"	Between St. Lambert Hill and Place d'Armes	6	40	165	60	69
"	Near St. François Xavier	6	35	170	62	70
"	Near St. George	6	28	177	65	71
"	Corner St. Peter	6	40	165	65	71
"	Between St. Peter and Victoria square	6	29	176	64	72
Foundling	Corner Port	4	20	185	66	75
"	" Normand	6	20	185	66	72
Frontenac	" St. Catherine	6	.....	.....	.....	76
"	" Logan	4	49	156	63	63
"	On Abattoir grounds No. 1	6	.....	.....	30	30
"	" " No. 2	6	.....	.....	29	30
"	" " No. 3	6	.....	.....	30	31
"	" " No. 4	6	.....	.....	28	30
Fullum	Near corner Morin lane	6	42	163	65	67
"	Below St. Catherine	6	37	168	69	70
"	Opposite Providence Convent	6	38	167	69	70

"	Below Ontario	6	36	169	69	71
"	Corner Ontario	6	43	162	60	63
"	Between Ontario and Amity	6	62	143	56	60
"	Corner Amity	6				64
German	" Vitré	4	25	180	67	76
"	Betw en Dorchester and St. Catherine	4	60	145	56	63
"	Corner Mignonne	4	60	145	56	63
"	Between Mignonne and Ontario	4	61	144	46	58
Gosford	Corner Champ de Mars	4	43	162	60	66
Grand Trunk	Between Montmorenci and Condé	6	23	182	71	66
"	Corner Richmond	6	22	183	71	71
"	" Shearer	6	21	184	71	71
Grant	Between Water and Notre Dame	4	54	151	55	61
Grothé	At head of street	4	67	138		55
Guy	Near north corner Forgue av nu	4	19	186	66	70
"	Above St. James	4	21	184	66	75
"	Opposite Mount St. Mary Convent	6	98	107	46	48
"	Between Dorchester and St. Catherine	6	119	86	36	39
"	Corner St. Catherine	6	123	82	36	45
"	" St. Luke	6				33
Harbour	To gas works near Mignonne	6				64
"	" "	6				45
"	Corner Lafontaine	4				45
"	" Ontario	6	47	158	65	69
Hospital	" St. Alexis	12	38	167		71
Hudon	" St. Michael	4				75
Iberville	" St. Catherine	4	39	166		
"	" Logan	6	48	157	60	66
"	" Ontario	4	37	168	70	68
Inspector	" William (Hay market)	10	20	185	69	76
Jacques Cartier	Between Craig and Lagauchetiere	4	34	161	68	74
"	" Dorchester and St. Catherine	4	46	159	65	67
"	" Mignonne and Ontario	4	60	145	58	62
Jurors	Opposite Anderson	6	25	180	72	77

STATEMENT of the positions of Fire Hydrants, etc.

STREETS.	Where Hydrants situated.	Size of supply main.	Elevation above Datum in feet.	Head of Water in ft.	Hydrant pressure in lbs. per sq. in.	
					Oct. 1886	Apl. 1887
Jurors	Corner Bleury	6	27	178	.....	75
"	" Hermine	6	26	173	.....	76
King	Between Common and Wellington	4	21	184	66	75
Labelle	" Dorchester and St Catherine	4	56	149	60	65
Lacroix	Corner Champ de Mars	4	49	156	60	68
Lafontaine	" Maisonneuve	6	59	146	.....	61
"	" Champlain	6	58	147	.....	65
Lagauchetière	Between Voltigeurs and St. Ignace	6	29	176	70	76
"	Corner Plessis	6	29	176	68	69
"	" Panet	6	31	174	72	76
"	" Visitation	6	31	174	70	73
"	" Beaudry	6	32	173	70	76
"	" Montcalm	6	31	174	70	71
"	" Wolfe	6	34	161	69	70
"	" Amherst	6	39	176	65	71
"	" Jacques Cartier	6	43	152	65	70
"	" Campeau	6	46	159	64	69
"	" St. Hubert	6	50	155	62	65
"	" Berri	6	52	143	60	65
"	" Sanguinet	6	39	166	61	65
"	" German	6	34	161	66	73
"	" St. Constant	6	32	173	61	70
"	" St. Dominique	6	33	162	63	70
"	" St. Lawrence	6	35	170	65	70
"	" St. Charles Borromée	6	35	170	65	76

Lagauchetiere	Corner St. Urbain	6	37	168	65	74
"	Near opposite Coté	6	37	168	65	71
"	Near Anderson	6	36	169	62	76
"	Corner Bleury	6	34	161	68	76
"	" St. Alexandre	6	43	162	51	70
"	Near Beaver Hall Hill	6	53	152	60	63
"	About 200 feet west Beaver Hall Hill	6	59	146	55	61
"	Corner St. Genevieve	6	58	147	57	61
"	" St. Monique	6	58	147	60	62
"	" St. Margaret	6	60	145	.....	62
Latour	Near opposite Busby	4	30	175	66	74
"	Corner St. Monique	4	39	166	.....	71
Laval Avenue	Opposite Courville, St Louis square	6	123	82	35	37
"	Corner Roy	6	123	82	30	32
"	About 150 feet below St. Jean Baptiste	6	130	75	30	31
Lemoine	Near opposite St. Helene	10	25	180	68	75
Lincoln Avenue	* Midway between Guy and St. Mathew	4	145	273	11	120
Logan	Corner Dufresne	6	44	161	65	68
"	" Champlain	4	61	144	57	65
"	" Plessis	4	64	141	55	61
Lorne Avenue	" Milton	6	125	80	35	38
"	Near Prince Arthur	6	129	76	30	42
Lusignan	Betw en Notre Dame and G. T. R. Track	4	27	178	64	70
Mackay	" Dorchester and St. Catherine	4	112	93	41	40
"	" St. Catherine and Sherbrooke	6	125	80	39	38
Mag alen	Near Leber	4	21	184	65	71
"	Corner Favard	4	25	180	65	71
Maisonneuve	" Logan	4	65	140		.....
"	Between Ontario and Sherbrooke	4	78	127	50	56
e	" "	4	94	111	43	51
	Corner Milton	6	124	81	34	35
eld	Between Lagauchetiere and Dorchester	6	90	115	44	48
	" Dorchester and Cathcart	4	89	116	48	54
	Corner Burnside	4	108	97	.....	46

STATEMENT of the positions of Fire Hydrants, etc.

STREETS.	Where Hydrants situated.	Size of supply main.	Elevation above Datum in feet.	Head of Water in ft.	Hydrant pressure in lbs. per sq. in.	
					Oct. 1886	Apl. 1887
Manufacturers	Near City limits	4	23	182	63	71
Maple	Corner Cherrier	6	119	86	34	38
"	About 200 feet above Roy	6	123	82	.....	37
"	About 60 feet below St. Jean Baptiste	6	126	79	35	36
Marlborough	Corner Logan	4	20	185	65	70
McCord	Near corner Smith	12	20	185	66	72
"	Between Smith and Ottawa	12	20	185	66	70
"	Corner Ottawa	12	19	186	66	70
"	" William	12	19	186	66	71
"	On Barré about 30 feet from south corner	12	20	185	66	72
McGill	Corner Youville	6	21	184	66	76
"	Between Youville and Foundling	12	21	184	.....	75
"	Corner College	6	21	184	69	71
"	" Lemoine	12	28	177	66	71
"	" Recollet	12	28	177	66	71
"	South corner Notre Dame	6	30	175	66	71
McGill College Avenue	About 40 feet below Burnside	4	99	106	46	51
" "	In rear McGill College buildings	24	.....	.....	23	31
McTavish	* East corner Carleton road	4	158	260	110	113
"	* At McTavish Reservoir	4	210	208	.....	90
Metcalf	Between Dorchester and St. Catherine	12	91	114	50	56
"	Corner Burnside	12	108	97	40	46
Mignonne	" St. Germain	4	.....	.....	61	70
"	" Frontenac	4	37	168	69	70
"	" Champlain	6	50	155	62	66

Mignonne	Corner Maisonneuve	6	35	150	62	62
"	" Plessis	6	57	148	60	61
"	" Montcalm	6	63	142	55	71
"	Between St. Hubert and St. Denis	4	65	140	45	50
"	Corner St. Constant	4	59	146	55	60
"	" St. Charles Borromée	4	55	150	59	66
Mill	Opposite Exchange Hotel	10	26	179	65	71
"	" W. Mooney & Co., saw mill	10	22	183	65	76
"	(1) At Montreal Warehousing Co.	10	22	183	68	71
"	(2) " "	10	22	183	68	71
"	In Lyman & Sons Yard	10	21	184	65	71
"	South end Pillow Hersey & Co. mill	10	20	185	68	71
"	East end Gould's mill	10	18	187	68	71
"	In Gould's Yard	10	18	187	68	73
"	South end Peck Benny's nail mill	10	22	183	68	71
"	East end " "	10	26	179	68	73
"	Near No. 31	10	23	182	68	71
"	East of Cyclone Pulverizing Co.	10	23	182	68	73
Montcalm	Between Dorchester and St. Catherine	4	45	160	65	70
"	Corner Robin	4	62	143		56
"	Between Robin and Ontario	4	59	146	60	61
"	" Ontario and Sherbrooke	4	69	136	55	60
Montmorenci	Corner Canal	4	24	181		70
Moreau	" Notre Dame	6			65	78
"	" St. Catherine	6			63	75
"	" Logan	6			62	74
"	" Lafontaine	6				70
"	" Ontorio	4			62	65
"	About 1200 feet above Ontario	4			58	65
"	About 2200 " "	4			55	65
"	At Civic Hospital	4				
Mountain	Corner Rolland	12	21	184	66	70
"	Near east cerner St. James	12	21	184	73	75
"	Corner St. Antoine	12	53	152	64	65

STATEMENT of the positions of Fire Hydrants, etc.

STREETS.	Where Hydrants situated.	Size of supply main.	Elevation above Datum in feet.	Head of Water in ft.	Hydrant pressure in lbs. per sq. in.	
					Oct. 1886	Apl. 1887
Mountain	Corner Osborne	12	83	122	51	52
"	" Dorchester	12	96	109	45	45
"	Between Dorchester and St. Catherine	12	106	99	46	45
"	Corner St. Catherine	12	109	96	41	45
"	Between St. Catherine and Sherbrooke	12	121	84	34	35
Murray	" Smith and Ottawa	4	21	184	....	70
Napoléon	" St. Hypolite and St. Dominique	4	138	67	21	25
Nazare h	About 150 feet west Brennan	4	21	184	71	71
Normand	Corner Youville	4	22	183	69	75
Notre Dame	East of present City limits	4	32	173	68	68
"	Opposite convent, lower end	10	27	178	55	75
"	" upper end	10	26	179	67	70
"	About 900 feet east St. Michael	10	25	180	67	75
"	About 600 feet " "	10	25	180	69	76
"	Corner St. Michael	10	26	179	68	77
"	About 20 feet west Dézéry	10	27	178	63	78
"	Corner Marlborough	10	32	173	65	75
"	About 150 yards east of Gale	10	.....	.....	64	70
"	About 100 feet east C. P. R. bridge	10	.....	.....	64	70
"	About 150 feet west "	10	.....	.....	60	70
"	Corner Frontenac	10	40	165	60	70
"	" Suzanne	10	38	167	55	65
"	" Dufresne	10	43	162	62	65
"	" Fullum	10	44	161	0	65
"	" Parthenais square	10	40	165	56	66

Notre Dame	In Jail yard	10	38	167		47
"	Corner Delorimier	10	38	167		75
"	Opposite Molson's brewery	10	36	169	70	75
"	Corner Gain	10	33	172	68	70
"	In Canad. Rubber Co's yard	10	30	175	77	75
"	In Molson's brewery yard	6	32	163		
"	Corner Voltigeurs	6	40	165	66	71
"	" St. Ignace	6	43	162	66	71
"	" Desalaberry	6	47	158	63	71
"	" Panet	6	49	156	61	66
"	" Visitation	6	53	152	54	66
"	" Brock	6	58	147	61	64
"	" Montcalm	6	61	144	56	61
"	" Grant	6	67	138	54	61
"	Opposite Amherst	6	72	133	49	56
"	Corner Jacques Cartier	6	71	134	54	56
"	" Campeau	6	70	135	51	56
"	" Lacroix	6	65	140	54	61
"	At Dalhousie square	10	63	142	51	66
"	About 80 feet west Barrack	10	65	140	53	61
"	Near corner St. Claude	10	66	139	56	61
"	Opposite Nelson's monument	10	61	144		61
"	City Hall square	4	55	150	56	66
"	At Court House	10	57	148	56	64
"	Corner St. Gabriel	10	57	148	56	64
"	" St. Lambert	10	56	149	56	65
"	Between St. Lambert Hill and Place d'Armes	10	53	152	57	65
"	On Place d'Armes Square	10	50	155	59	66
"	Corner St. François Xavier	10	44	161	61	67
"	Near east corner St. John	10	43	162	59	67
"	Corner St. Peter	10	37	168	61	68
	Near corner St. Helen	10	36	169	61	69
	Opposite St. Henri	10	33	172	66	75
	Near Roy lane	10	28	177	66	71

STATEMENT of the positions of Fire Hydrants, etc.

STREETS.	Where Hydrants situated.	Size of supply main	Elevation above Datum in feet.	Head of Water in ft.	Hydrant pressure in lbs. per sq. in.	
					Oct. 1886	Apl 1887
Notre Dame	Corner Dupré lane	10	27	178	66	71
"	" St. David	10	21	184	71	76
"	" Inspector	10	21	184	71	76
"	At Chaboillez square	4	21	184	66	71
"	In Dow & Co's yard	10	19	186	71	76
"	Corner Colborne	10	21	184	66	76
"	" Murray	10	25	180	66	71
"	" Eleanor	10	26	179	66	71
"	" Mountain	10	28	177	66	70
"	" Aqueduct	6	31	174	61	70
"	" Versailles	6	33	172	61	65
"	" Lusignan	6	34	171	66	65
"	" Guy	6	35	170	64	65
"	" Richmond	6	34	171	63	65
"	" St. Martin	6	34	171	64	65
"	" Chatham	6	31	174	61	65
"	" Canning	6	32	173	64	68
"	Near Fulford	6	30	175	66	65
Olier	At B nd near McCord	4	21	184	56	75
"	Corner Seminary	4	24	181	61	65
Ontario	Off Moreau near Railway Track	4	.....	.....	60	64
"	Corner Poupart	6	42	163	70	69
"	" Champlain	6	64	141	60	61
"	" Maisonneuve	6	65	140	55	61
"	" Plessis	6	65	140	59	61

Ontario	Corner Panet	6	65	140	60	61
"	Between Montcalm and Wolfe	6	62	143	58	63
"	Corner Jacques Cartier	6	64	141		60
"	" St. André lane	6	63	142	59	60
"	Opposite St. Christophe	6	58	147	63	63
"	Corner Berri	6	60	145	61	64
"	" Sanguinet	6	59	146	61	61
"	" German	6	60	145	56	65
"	" St. Constant	6	58	147	61	62
"	" St. Lawrence	6	60	145	61	62
"	" St. Urbain	6	71	134	51	61
"	Between St. Urbain and Mance	6	75	130	53	61
"	Corner Mance	6	80	125	49	61
Ontario Avenue	* Above Sherbrooke near head of street	4	211	207		102
Osborne	Near Cathedral 40 f et east	4	79	126	48	56
"	Corner Windsor	4	80	125	48	56
"	Opposite Bisson	4	86	119	47	49
Ottawa	Corner Queen	10	21	184	66	76
"	" Prince	10	20	185	66	78
"	" Duke	10	21	184	67	76
"	" Nazareth	10	20	185	66	76
"	" Dalhousie	10	20	185	66	76
"	" Ann	10	21	181	66	76
"	" Shannon	10	19	186	66	76
"	" Colborne	10	20	185	66	76
"	" Young	10	19	186	65	76
	" Murray	10	20	185	66	71
	" Seminary	6	21	184	66	65
	" St. Thomas	6	21	184	66	73
	Opposite Henderson lumber yard	6	20	185	66	70
	Near corner Water	10	50	155	60	66
	Opposite St. Rose	4	35	170	70	71
"	" Allard lane	6	52	153	60	66
"	Between Mignonne and Logan	6	64	141	55	61

STATEMENT of the positions of Fire Hydrants, etc.

STREETS.	Where Hydrants situated.	Size of supply main.	Elevation above Datum in feet.	Head of Water in ft.	Hydrant pressure in lbs. per sq. in.	
					Oct. 1886	April 1887
Panet	Corner Lafontaine	6	60	145	55	59
"	About 50 feet south of Larivière	6	70	135	55	56
Papineau Road	Corner Notre Dame	6	35	170	71	76
"	" Craig	10	35	170	67	70
"	" Lagauchetière	6	34	171	72	73
"	Opposite St. Rose	6	36	169	72	70
"	Corner Ontario	6	62	143	60	60
"	Below Sherbrooke	6	101	104	55	56
"	Above Sherbrooke	6	118	87	38	38
Park Avenue	About 150 feet below Milton	6	125	80	35	35
"	About 300 feet above "	6	125	79	35	34
"	* Corner Pine Avenue	6	141	277	120	121
Parthenais	Midway between Notre Dame and St. Catherine	4	43	162	68	67
"	Corner St. Catherine	4	43	162	65	66
"	" Mignonne	4	33	172	70	72
"	" Lafontaine	4	38	167	60	64
"	Above Ontario	4	48	157	65	67
Pea Lane	At end of lane	4	20	185	71	76
Peel	Corner Cypress lane	4	94	111	46	51
"	" Burnside	4	115	90	36	39
"	About 200 feet above Sherbrooke	4	130	75	34	34
"	* About 900 feet " "	4	193	225	105	108
"	* " 1200 " " "	4	226	192	83	96
"	* Below Pine Avenue	4	281	137	70	76
"	* Rear of Ravenscrag (Allan properties)	12	.....	.....	45	45

Peel	* In serpentine road of Park	12			23	
Perthuis	Near Lacroix	4	41	164	60	66
Philipp's Place	Near opposite Cathcart	6	89	116	47	51
Pine Avenue	* Opposit St. Famille	12	140	278	123	123
"	* " Ma' ce	12	141	277	120	120
"	* Corner Durocher	12	152	266	115	115
"	* " Oxenden	6	170	248	105	109
"	* Opposite McTavish	12	262	156	65	73
"	* " judge Day's (w st of Simpson)	12	284	134	61	63
"	* Near Cote des Neiges Hill	12	279	139	61	64
Plateau	Corner Manc	4	91	114		50
Plessis	Just below St. Catherine	4	33	172	68	68
"	B tween Lafontaine and Ontar o	4	56	149	55	61
"	About 400 feet above Ontario	4	78	127	50	51
Plymouth Grove	At east end	4	57	148	54	56
Prefontaine	About 350 feet above Notre Dame	4			60	75
Prince	Corner Brennan	4	42	183	66	75
"	Between Brennan and Wellington	4	22	183	66	74
Prince Arthur	Corner Shuter	6	129	76	33	33
Queen	Be twe n Common and Wellington	4	22	183		75
Quesnel	Near Dominion	4	28	177	66	70
R-chel	* Corner Clarke	10	179	239		107
	* " St. Lawrence	10	175	243		102
	" Pantaléon	6	155	263		
	" Berri	6	129	289		
let	" St. Helen	10	35	170	65	73
path	* About 400 feet above Sherbrooke	4	202	216	96	99
"	* " 400 f et below Pine avenue	4	229	189	81	82
"	* Corner Pine avenue	4	304	114	66	65
Richardson	' Montmorenci	4	20	185	66	71
"	" Richmond	4	20	185	66	71
"	Near City lim ts	4	23	182	66	66
	Nea corner Wellington	4	21	184	65	71
	" St. Patrick	4	24	181	65	71

STATEMENT of the positions of Fire Hydrants, etc.

STREETS.	Where Hydrants situated.	Size of supply main.	Elevation above Datum in feet.	Head of Water in ft.	Hydrant pressure in lbs. per sq. in.	
					Oct. 1886	Apl 1887
Richmond	Corner William	10	23	182	66	68
"	Near corner Trudel lane	10	20	185	66	73
"	Close to G. T. R. Track	10	20	185	.....	70
"	About 25 feet below Richmond square	4	42	163	64	65
Roy	Corner Drolet	4	121	84	.....	38
Sanguinet	" Vitré	4	25	180	71	.. ....
"	" Boyer lane	4	49	156	61	65
"	" Mignonne	4	68	137	46	50
"	" St. Emery	4	65	140	56	59
"	Above Roy	6	121	84	30	35
Sebastopol	Near corner Leber	4	24	181	65	70
"	" Favard	6	27	178	65	71
	Between Favard and Wellington	6	25	180	.....	71
Seigneurs	Near bridge at lock	10	36	169	66	66
"	Off at McDougall's foundry doorway	4	27	178	.. ....	70
"	Corner Basin	10	24	181	66	70
"	Opposite Payette	4	27	178	66	70
"	Corner Fournier lane	6	21	184	66	70
"	Near corner Notre Dame	6	31	174	66	67
"	Corner St. James	6	25	180	69	70
"	Between St James and St. Antoine	6	27	178	61	67
"	At upper bend	6	71	134	.....	53
Shaw	About 75 feet obove Craig	4	39	166	72	72
"	Corner Mignonne	4	28	177	69	73
"	" Logan	4	53	152	55	59

Shaw	Near corner Sherbrooke	6	120	85	39	40
Shearer	Corner Mullin	6	21	184	65	71
"	" Richardson	4	19	186	60	71
"	At silk mills near Canal	6	36	169	62	71
Sherbrooke	Opposite Visitation	30	109	96	.....	41
"	Corner Jacques Cartier	10	92	113	48	48
"	" St. Hubert	10	103	102	45	43
"	" St. Denis	10	109	96	40	40
"	" Laval Avenue	10	119	86	36	38
"	" St. Lawrence	10	117	88	39	38
"	" St. Urbain	10	121	84	36	36
"	" Mance	10	121	84	36	36
"	" Bleury	10	113	92	40	41
"	" City Councillors	10	117	88	35	38
"	" Union avenue	10	118	87	37	38
"	" University	12	116	89	40	40
"	" McGill College Avenue	12	118	87	36	38
"	" Metcalfe	12	121	84	35	36
"	" Stanley	12	126	79	32	34
"	" Drummond	12	135	70	26	30
"	" Mountain	12	140	65	26	30
"	* Opposite Ontario Avenue	6	145	273	111	115
"	* " Redpath	6	150	268	111	116
"	* " Simpson	6	158	260	111	110
"	* Corner St. Mathew	6	158	260	111	110
"	* " St. Mark	6	159	259	111	110
"	* Opposite Montreal College	6	159	259	106	110
[illegible]	Betwe n Sherbrooke and Milton	10	125	80	39	38
[illegible]	Above Milton	10	126	79	32	34
[illegible]	* About 400 feet above Sherbrooke	4	185	233	96	95
"	* About 350 feet below McGregor	4	212	206	81	85
"	* Opposit McGregor	4	235	183	81	82
Smith	Corner Young	4	22	183	66	71
St. Alexandre	" Jurors	4	26	179	70	76

STATEMENT of the positions of Fire Hydrants, etc.

STREETS.	Where Hydrants situated.	Size of supply main.	Elevation above Datum in feet.	Head of Water in ft.	Hydrant pressure in lbs. per sq. in.	
					Oct. 1886	Apl 1887
St. Alexandre	Near corner Dorchester	4	76	129	58	54
"	Between Dorchester and St. Catherine	4	91	114	46	54
"	Corner Mayor	4	84	121	50	56
St. Alphonse	About 140 feet above Dorchester	4	34	171	.....	67
St. André	Between Dorchester and St. Catherine	4	47	158	64	66
"	Corner Mignonne	4	61	141	55	56
"	Between Mignonne and Ontario	4	59	146	59	60
"	" Ontario and Sherbrooke	4	66	139	55	61
St. Antoine	Corner St. Genevieve	6	24	181	71	71
"	" St. Monique	6	29	176	66	76
"	Near opposite Inspector	6	33	172	66	71
"	Corner Cathedral	6	39	166	66	66
"	Corner Windsor	6	44	161	66	66
"	" Bisson	6	49	156	66	66
"	About 40 feet east Lusignan	6	57	148	61	60
"	Corner Guy	6	56	149	61	60
"	At Richmond square	4	52	153	61	65
"	Corner Seigneurs	4	47	158	61	65
"	" Canning	4	46	159	61	65
"	" Dominion	4	44	161	61	65
St. Augustin	" Basin	4	21	184	66	70
St. Catherine	" D fresne	6	39	166	68	70
"	About 40 feet East of Fullum	6	41	164	65	65
"	Corner Delorimier	6	36	169	70	70
"	" Shaw	6	33	172	60	71

St. Catherine	Corner Papineau Road	6	36	169	69	71
"	" Champlain	6	33	172	69	68
"	" St. Alphonse	6	33	172	70	73
"	" Panet	6	38	167	67	71
"	" Beaudry	6	49	156	60	65
"	Between Montcalm and Wolfe	6	51	154	62	66
"	" Wolfe and Amherst	6	52	153	62	66
"	Corner Jacques Cartier	6	53	152	62	64
	" St. André	6	54	151	62	66
	" St. Hubert	6	54	151	60	60
	" Labelle	6	54	151	60	60
	" Sanguinet	6	59	146	55	60
	" St. Elizabeth	6	60	145	60	62
	" German	6	60	145	55	63
	" St. Constant	6	61	144	55	60
	" St. Dominique	6	60	145	60	61
	" St. Lawrence	6	58	147	....	71
	" St. Chas. Borromée	6	52	153	60	68
	Opposite St. Philippe	6	58	147	58	66
	Corner Mance	6	70	135	55	61
	" Bleury	6	88	117	46	51
	South corner Bleury (large)	24	89	116	51	51
	Between Bleury and St. Alexander	6	92	13	44	50
	Corner St. Alexander	24	93	112	51	50
	Opposite City Councillors	6	90	115	46	51
	At Phillips square	24	91	114	52	50
	Corner Union Avenue	6	90	115	47	51
	" University	6	89	116	50	51
	East Corner University	24	90	115	51	51
	Corner McGill College Avenue	6	92	113	45	51
	" Mansfield	6	93	112	45	56
	" Metcalfe	12	95	110	45	51
	" Peel	12	97	108	45	54
	" Stanley	12	102	103	45	45

STATEMENT of the positions of Fire Hydrants, etc.

STREETS.	Where Hydrants situated.	Size of supply main.	Elevation above Datum in feet.	Head of Water in ft.	Hydrant pressure in lbs. per sq. in.	
					Oct. 1886	Apl 1887
St. Catherine	Corner Drummond	12	104	201	41	45
"	" Crescent	12	111	94	41	45
"	" Bishop	6	116	89	37	45
"	" Mackay	12	121	84	46	45
"	West of Guy at Fire Station	12	124	81	.....	40
"	In Grey Nun's yard	4	121	84	.....	39
"	Corner St. Mathew	12	124	81	36	40
"	" St. Mark	12	126	79	.....	34
"	" Fort	12	127	78	36	45
"	" Chomedy	12	127	78	36	45
"	" Closse	12	127	78	.....	36
St. Charles Borromé	" Vitré	4	30	175	65	76
"	Between Dorchester and St. Catherine	4	53	152	60	60
"	Corner Evans	4	81	124	46	52
St. Christophe	Between Dorchester and St Catherine	4	49	156	55	61
"	" Mignonne and Ontario	4	60	195	60	62
St Constant	Corner Vitré	4	25	180	.....	70
"	" Dorchester	4	58	147	61	65
"	Between Mignonne and Ontario	4	57	148	56	60
St. David	" Notre Dame and St. James	4	19	186	71	76
St. Denis	Corner Dubord	10	35	170	66	70
"	" Lagauchetière	10	45	160	63	70
"	" Dorchester	10	51	154	63	65
"	" St. Julie	10	53	152	61	63
"	" St. Catherine	10	56	149	61	63

St. Denis	Corner Mignonne	10	64	141	59	60
"	" St. Emery	10	63	142	61	60
"	In Reformatory School yard East	6	64	141	55	60
"	" " " West	6	64	141	55	60
"	Corner Ontario	10	65	140	61	60
"	" Cherrier	6	121	84	35	35
"	Between Cherrier and Roy	6	122	83	35	37
"	Above Roy	6	122	83	35	38
"	Near St. Jean Baptiste	4	127	78	35	33
"	Corner Rachel	4	132	73		31
"	" Marianne	4	134	71		25
"	" Mount Royal	4	144	61		24
St. Dominique	" Dorchester	4	54	151	63	63
"	Opposite Charlotte	4	57	148	56	64
"	Corner Mignonne	4	56	149	61	64
"	About 30 feet below Ontario	4	57	48	61	65
"	Corner Fortier	4	92	113		47
"	" Sherbrooke	4	119	86	35	36
"	Between Sherbrooke and Courville	4	124	81		35
"	Opposite Charbonneau	4	128	77	30	30
"	Corner Roy	4	127	78	32	34
St. Edward	About 160 feet West of Bleury	4	92	113		54
St. Elizabeth	Corner Vitré	4	25	180	66	74
"	" Lagauchetière	4	37	168	61	79
"	Between Dorchester and St. Catherine	4	58	147	56	60
"	Near Mignonne	4	63	142	62	62
"	Between Mignonne and Ontario	4	56	149	56	59
St. Etienne	About 230 feet North of Mill	10	25	180	63	71
"	Opposite G. T. R. Offices	10	23	182	65	71
"	Corner Canal	4	23	182	65	71
St. Famille	Above Sherbrooke	6	125	80		39
"	Below Bagg	6	127	78		39
"	About 200 feet above Bagg	6	127	78		37
St. Felix	About 100 feet East of Albert	4	20	185	66	66

STATEMENT of the positions of Fire Hydrants, etc.

STREETS.	Where Hydrants situated.	Size of supply main.	Elevation above Datum in feet.	Head of Water in ft.	Hydrant pressure in lbs. per sq. in.	
					Oct. 1886	Apl 1887
St. Felix	Between St. James and St. Antoine	4	33	172	71	71
St. François Xavier	Corner St. Paul	10	22	173	67	77
"	" Sacrament	10	34	171	.....	72
"	" Hospital	10	40	165	62	71
St. Gabriel	" St. Paul	4	29	176	66	75
"	" St. Thérèse	4	39	166	58	68
"	" St. James	10	56	149	53	65
"	At End of Champ de Mars	10	46	159	.....	66
St. Geneviève	Corner Latour	4	31	174	63	74
St. George	About 100 feet below Vitré	6	24	181	72	81
"	Between Lagauchetière and Dorchester	4	48	157	60	69
"	Opposite Vallée	4	59	146	58	66
St. Germain	Corner Logan	4	.....	.....	60	59
"	" Ontario 25 feet East	4	.....	.....	.....	70
St Henry	" St. Maurice	4	27	178	66	66
St. Hubert	Between Dorchester and St. Catherine	4	50	155	58	60
"	Corner Mignonne	4	67	138	56	60
"	About 350 feet above Mignonne	4	69	136	53	60
"	Corner Robin	4	62	143	56	60
St. Hypolite	Between Sherbrooke and Courville	4	122	83	33	33
"	Near Roy	4	127	78	30	31
"	Between Roy and Napoléon	4	128	77	31	32
St. James	Between St. Lambert and Place d'Armes Sq.	10	53	152	54	66
"	On Place d'Armes Square	10	51	154	67	67
"	" " "	24	51	154	68	67

St. James	North Corner St. François Xavier	10	46	159	60	67
"	South " " "	24	46	159	68	70
"	Opposite St. John	10	43	162	58	69
"	North Corner St. Peter	10	10	165	59	70
"	East corner St. Peter	24	39	166	71	71
"	Opposite Dollard	10	35	170	61	71
"	Near corner McGill	24	30	175	77	77
"	Corner St. Michael lane	10	26	179	71	76
"	" Little St. Antoine	4	22	183	66	76
"	" Roy lane	10	22	183	71	76
"	" St. David	10	21	184	71	76
"	" Inspector	10	20	185	71	76
"	" Chaboillez	10	22	183	71	76
"	" Cathedral	10	22	183	71	76
"	Opposite Desrivières	10	20	185	71	76
"	In G. T. R. Depot yard	4	20	185		
"	Corner St. Felix	4	20	185	71	71
"	" Aqueduct	10	20	185	71	75
"	" Lusignan	10	20	185	71	75
"	" Richmond	10	19	186	71	75
"	" St. Martin	10	23	182	71	66
"	" Chatham	10	23	182	71	70
"	" Canning	10	23	182	66	70
"	" Fulford	10	27	178	68	67
"	" Dominion	10	28	177	66	70
St. Jean Baptiste	Below Notre Dame	4	46	159	57	67
St. Lawrence	Corner Vitré	6	29	176	65	81
"	" Dorchester	6	54	151	65	68
"	" Charlotte	6	57	148	59	66
"	" Mignonne	6	55	150	61	68
"	" Fortier	6	86	119	49	50
"	Between Sherbrooke and Courville	10	123	82	31	36
"	Corner Courville	10	128	77	31	36
"	" Charbonneau	10	127	78	31	39

STATEMENT of the positions of Fire Hydrants, etc.

STREETS.	Where Hydrants situated.	Size of supply main.	Elevation above Datum in feet.	Head of Water in ft.	Hydrant pressure in lbs. per sq. in. Oct 1886	Apl 1887
St. Lawrence	Near corner Roy	10	133	72	28	35
"	" Napoleon	10	144	61	23	23
"	" St. Jean Baptiste	10	155	50	.....	23
"	Between St. Jean Baptiste and Rachel	12	162	43	.....	19
"	" Rachel and Marianne	12	185	233	.....	108
St. Louis	Corner Berri	6	39	166	60	68
St. Margaret	At Bishop palace, head of street	4	80	125	.....	56
Off St. Margaret	To Gateway Larivière saw mill	4	26	179	.....	74
St. Mark	Corner St Luke	4	129	76	31	33
St. Martin	Near G. T. R. track	4	21	184	69	70
"	Between St. James & St. Antoine	4	33	172	66	68
"	Corner St. Antoine	4	50	155	61	65
St. Mathew	Opposite Baile	4	120	85	36	38
"	Corner St. Luke	4	130	75	31	33
St. Mathew lane	About 220 feet above Ontario	4	64	141	.....	60
St. Maurice	Corner Longueuil	6	26	179	71	76
"	Between St. Henri et Dupré	6	28	177	66	76
"	Near Dupré	6	25	179	66	76
"	Between Dupré and Inspector	6	22	183	66	71
St. Patrick	Near St. Etienne	10	20	185	66	71
"	Corner Condé	10	22	183	63	71
"	Gateway Sugar Refinery	10	22	183	66	71
"	In Sugar Refinery yard	10	22	183	66	71
"	" " "	10	23	182	66	71
"	" " "	10	26	179	66	71

St. Patrick	Corner Shearer (east)	10	26	179	66	71
"	" Shearer (west)	10	27	178	66	71
"	" Island	10	25	180	66	71
"	In Canada Cordage works yard	4	24	181		
St. Paul	Corner Friponne	12	48	157	61	69
"	" Bonsecours	12	45	160	61	71
"	About 60 fee west of Bonsecours large	12	41	164	68	71
"	About 50 feet west of Victor	12	43	162	61	71
"	Opposite North corner of Claude	12	41	161	66	71
"	About 60 feet west of Claude	12	40	165	66	71
"	About 120 eet west Claude (large)	12	36	169	71	71
"	On Jacques Cartier Square (large)	12	35	170	73	76
"	Opposite St. Vincent	12	33	172	66	76
"	" Vaudreuil (large)	12	33	172	72	76
"	Corner St. Jean Baptiste	12	30	175	66	75
"	North corner St. Dizier	12	32	173	66	74
"	South " " (large)	12	32	173	76	70
"	East " St. Sulpice	12	33	172		76
"	Between St. Sulpice and Cus. House Sq. (large)	12	23	182	76	76
"	At Custom House Square	12	23	182	66	76
"	Near St. Eloi	12	22	183	78	77
"	Corner St. Nicholas	12	23	182	68	76
"	" St. Peter	12	20	185	68	76
"	Between St. Peter and McGill	12	20	185	69	77
"	Near corner McGill (large)	12	21	184	79	78
t. Peter	Between Common and Foundling	6	22	183		76
"	Corner Lemoine	10	28	182	67	75
"	Opposite Recollet	10	32	173	65	72
St. Philip	" Vallée	4	56	149	58	66
St. Pierre lane	Off Mignonne, below Logan	4	62	143		49
St Rose	In yard Victoria Straw works	4	36	169		67
	Corner Maisonneuve	4	38	167	67	67
	" St. Peter	10	30	175	65	74
	" St. John	10	30	175		74

STATEMENT of the positions of Fire Hydrants, etc.

STREETS.	Where Hydrants situated.	Size of supply main.	Elevation above Datum in feet.	Head of Water in ft.	Hydrant pressure in lbs per sq. in.	
					Oct. 1886	Apl 1887
St. Sulpice	Below St. Paul (large)	12	28	177	76	76
"	Corner Le Royer	24	35	170	74	71
"	Opposite Le Royer	6	34	171	63	72
"	Near Corner Notre Dame	24	49	156	67	66
St. Thérèse	Corner St. Vincent	4	38	167	60	71
St. Thomas	In Henderson Lumber Co's. yard	4	21	184	66	70
St. Urbain	Between Craig and Vitré	6	27	178	70	81
"	Near Corner Dorchester	6	47	158	62	68
"	Between Dorchester and St. Catherine	6	48	157	60	65
"	Corner St. Catherine	6	53	152	60	65
"	" Mignonne	4	62	143	56	61
"	" Evans	4	89	116	46	50
"	Between Sherbrooke and Bagg	4	127	78	33	38
"	Corner Bagg	4	126	79	29	38
"	" Guilbault	4	126	79	29	34
"	*About 200 feet above Pine Avenue	12	144	274	121	122
"	*About 600 feet above "	12	151	267	.....	120
"	*On line of St. Jean Baptiste	12	171	247	.....	115
"	*Corner Rachel	12	187	231	.....	105
Stanley	Between Osborne and Dorchester	4	90	115	46	53
"	" Dorchester and St. Catherine	4	96	109	46	50
Suzanne	Corner St. Catherine	4	39	166	65	65
"	Off Suzanne at Robb's terrace	4	42	163	65	65
Tupper	Near St. Mathew	4	122	83	35	35
"	Between St. Mark and Fort	4	125	80	34	34

Union Avenue	Between Dorchester and Cathcart	4	92	113	46	48
"	Corner Burnside	4	97	108	45	54
University	" Cathcart	4	87	118		48
"	" Burnside	4	97	108	44	46
"	Above Sherbrooke, opposite No. 169	4	121	84	35	40
"	Below Milton	4	125	80	30	38
"	About 300 feet below Prince Arthur	4	127	78	27	39
"	Corner Prince Arthur	4	153	52	20	21
"	*Just below Prolongation Pine Avenue	4	190	228	100	110
Versailles	Near G. T. R. track	4	19	186	66	72
Victoria	Mildway between St. Catherine and Burnside	4	96	109	46	46
"	Between Burnside and Sherbrooke	4	108	97	41	46
Victoria Square	" Jurors and Craig Nor. sid Square	4	23	179	70	76
Visitation	Corner St. Rose	4	41	164	68	70
"	" St. Catherine	6	46	159	67	67
"	" Mignonne	6	61	144	60	61
"	" Logan	6	63	142	58	61
"	About 100 feet above Lafontaine	6	63	142	61	61
"	Corner Larivière	6	69	136	55	59
Vitré	" St. Dominique	6	28	177	67	71
"	" St. Urbain	6	29	176	70	76
"	" Coté	6	26	179	66	76
Water	" Voltigeurs	4	36	169	66	71
"	" Barclay	6	42	163	64	76
"	About 75 feet west of Brock	6	40	165	66	71
"	Corner Grant	6	42	163	61	71
"	" Jacques Cartier	6	34	171	56	71
Wellington	" Grey Nun	10	20	185	66	75
"	" King	10	20	185	66	75
"	" Queen	10	21	184	66	75
"	" Prince	10	21	184	66	75
"	" Duke	10	22	183	68	75
"	" Nazareth	10	21	184	69	73
"	" Dalhousie	10	20	185	66	71

STATEMENT of the positions of Fire Hydrants, etc.

STREETS.	Where Hydrants situated.	Size of supply main.	Elevation above Datum in feet.	Head of Water in ft.	Hydrant pressure in lbs. per sq. in	
					Oct. 1886	Apl 1887
Wellington	Corner Ann	10	20	185	68	73
"	" Shannon	10	20	185	66	73
"	" Colborne	10	22	183	66	71
"	" Young	10	23	182	66	71
"	" Murray	10	23	182	66	71
"	" St. Patrick	12	20	185	68	71
"	" St. Columban	12	21	184	68	71
"	" St. Etienne	12	23	182	65	71
"	" Farm	12	22	183	66	71
"	" Centre	12	22	183	70	71
"	About 50 feet west of Mullins	12	20	185	70	71
"	Near Congregation	12	22	183	65	71
"	Corner Magdalen	12	22	183	50	66
William	" McGill	6	20	185	69	76
"	" King	6	20	185	69	76
"	" Queen	6	20	185	69	76
"	" Prince	6	20	185	69	75
"	" Duke	6	20	185	69	76
"	" Nazareth	6	20	185	69	76
"	Opposite Shannon	6	21	184	67	75
"	Corner Colborne	6	20	185	66	73
"	Near Murray	6	19	186	66	71
"	Near opposite St. Thomas	6	20	185	71	70
"	Opposite Shedden Stables	6	19	186	68	70
"	About 350 feet east of Guy	6	21	184	66	75

William	Corner Guy	6	21	184	66	60
"	" St. Martin	10	24	181	66	65
"	Qpposite Johnsons, near Cannning	10	30	175	66	70
"	In Singer Manufacturing Co's. yard	4	30	175	61	71
"	In rear Fibre works	4	29	176	66	
"	In Cantin's yard	10	30	175	61	65
"	At Cantin's dry dock	10	29	176	61	70
Off William near Guy	Between Basins 3 and 4	4	22	183		70
Wolfe	" Dorchester and St. Catherine	6	45	160	64	63
"	" St. Catherine and Mignonne	6	57	148	59	63
"	" Mignonne and Robin	6	64	141	58	65
"	Corner Robin	6	61	144	60	63
"	Between Robin and Ontario	6	59	146	60	65
"	" Ontario and Sherbrooke	6	67	138	55	56
Workman	" Canning and Fulford	4	27	178	66	66
Young	Corner William	4	19	186	66	71

Schedule No. 12 showing the position of Public Fountains erected in the City of Montreal, up to January 1887.

No.	LOCALITY.	Cast Iron basins.	Stone and Cement basins.	Stone Fountains.	Iron Fountains.	Wood Fountains.	Cattle water troughs.	Number of jets.
1	Beaver Hall Square				1			2
2	Bellerive Park	1			1			2
3	Bleury and Dorchester			1				1
4	Bonsecours Market					2		2
5	Chaboillez Square						1	1
6	Colborne at flour sheds				1		1	2
7	Court House Square	2	1	2				5
8	Craig at Victoria Square			1			3	1
9	Craig opposite Drill Hall				1			1
10	Custom House square				1		1	1
11	Dorchester and Dominion Sqr				1		1	1
12	Dorchester and Visitation					1		1
13	Grey Nuns and Common						1	1
14	Guilbault and St. Lawrence				1		1	1
15	Hay Market, College street					1	1	1
16	High Level Reservoir				1			1
17	Jac. Cartier Square and St. Paul	1			1		1	5
18	McTavish St. opp. Reservoir				1			1
19	McGill and Common Ex. W. H			1			1	1
20	Mill at waste weir					1	1	2
21	Moreau near Notre Dame				1			1
22	Mountain Park, foot of elevator				1			1
23	Notre Dame and St. Suzanne				1		1	2
24	Ontario and St. Denis					1	1	2
25	Ontario and Champlain					1	1	2
26	Papineau Square					1	1	2
27	Phillips Square				1			1
28	Phillips Square and St. Catherine						1	1
29	Place d'Armes	2	1					5
30	Prince and Common				1		1	2
31	Richmond Square		2		1			3
32	Seigneurs and Basin				1		1	2
33	Sherbrooke near Drummond					1	1	1
34	*Sherbrooke and Guy*					1	1	1
35	St. Ann's Market					4		2
36	St. Antoine Market						1	2
37	St. Catherine and Papineau						1	2
38	St. Gabriel Market						1	2
39	St. Louis Park	1			2			7
40	St. Patrick Square	1						2
41	St. Thomas and Ottawa					1	1	2
42	Victoria Square. South of Craig		1	2				7
43	do North do	3						4
44	Viger Square, Basin No. 1		1					1
45	Viger Square, Basin No. 2..7	3						9
46	Viger Square			1	1			2
47	Viger Market						6	6
48	Wellington and St. Patrick						1	2
49	Wellington and Centre	1						1

SCHEDULE No. 12.—*Continued.*

No	LOCALITY. (Exhibition Grounds).	Wood Fountains.	Cattle water troughs	Number of jets.
1	Distributed over grounds	....	12	12
2	For iced water	2	.....	8
3	Opposite Agricultural buildings	1	.....	1
4	Distributed over grounds for fire purposes	....	.....	4
	Total	3	12	25

No.	ALONG THE WHARFS. LOCALITY.	Iron Fountains.	Wood Fountains	Cattle water troughs.	Urinals.	Number of Jets.
1	Wind Mill Point	....	1	1	1	3
2	Allan's wharf	1	....	.....	1	2
3	Allan's Sheds	....	....	1	....	2
4	Opposite Custom House	....	....	.....	1	1
5	King's bassin	1	....	.....	....	1
6	Dominion Line	....	....	1	1	3
7	Foot of Jacques Cartier Square	1	....	.....	....	1
8	Beaver Line	....	....	1	1	3
9	Donaldson Line	....	....	.....	1	1
10	Longueuil Ferry	....	....	.....	1	1
11	Foot of Marlboro street	....	....	.....	1	1
	Total	3	1	4	8	19

ADMINISTRATION.

No. 13.—SCHEDULE showing the details of the Expenditure of the Montreal Water Work's Department for the civic year ending Dec. 31st 1886.

	$ cts.	$ cts.	$ cts.
AQUEDUCT.			
Repairs to fences and gates..	154 88		
do to bridges and painting.....	108 01		
Cleaning ditches and berm..	405 40		
Cutting weeds.....	136 95		
Guardian's salary.....	600 00		
Sundries—Rebuilding Sally's barn...	214 25		
		1619 49	
WHEEL HOUSE.			
D. Kearney, chief engineer.....	1600 00		
Candlish, assistant do	700 00		
Vallée, do	700 00		
Lafond and Lecours, oilers.....	880 00		
Repairing machinery.....	447 14		
do buildings.....	153 32		
do dwellings....	186 78		
New kitchen.....	506 43		
Grounds round buildings.	72 12		
Sundries.	37 25		
Supplies, oils, tallow, etc.....	988 48		
		6271 52	
ENGINE HOUSE.			
Repairing engines and boilers.....	609 98		
do buildings..	164 47		
Coal for steam.....	10563 66		
Wages.....	4010 79		
Rent for land.....	50 00		
S. Veary, engineer.	1000 00		
Sundries.....	27 06		
Supplies, oils, tallow, etc..	905 41	17331 37	
Carried over.....		25222 38	

Brought forward.		25222 38
TAIL RACE.		
Repairing bridge on Line Lachine Road.....	17 64	
Repairing fences.....	119 95	
do bank (last year).....	110 75	
		248 34
PIPE TRACK.		
Repairing mains and valve chambers.	296 65	
Filling up slope on Atwater Avenue.	43 27	
		339 92
RESERVOIRS.		
Guardian's salary.....	800 00	
McTavish—Repairs.....	293 43	
Shovelling snow.	21 96	
Fuel and light	123 12	
Sundries.	20 70	
		1259 21
HYDRANTS.		
Inspecting—Wages.	3661 11	
Repairing—Wages and materials....	2124 05	
Thawing—Horses and labor.....	668 82	
		6453 98
PUBLIC FOUNTAINS.		
Repairing—Wages.....	627 67	
do and materials.....	809 80	
		1437 47
DISTRIBUTION PIPES.		
Repairing mains, services and valves —Wages	10118 77	
Thawing pipes and carting water ...	1829 04	
Inspecting services inside houses.....	2276 40	
Repairing footpaths and service boxes —Wages.....	1769 49	
Materials, iron, castings, lead, tin, &c.	170 56	
do wood, planks, nails, &c....	202 24	
Carried over.....	16366 50	34961 30

Brought forward.....	16366	50	34961	30
Materials, bricks, cement, sand, &c..	90	38		
do rope, drain pipes, &c.....	2	35		
			16459	23
Work Shops on Lagauchetiere Street.				
Wages — Foreman, clerk, turncocks, &c., &c.....	6282	24		
Iron, spikes, nails, tin, lead, &c.....	91	73		
Timber, wood, coal oil, &c.	52	16		
Tools, pails, drinking cups, &c.....	174	75		
Rent of foreman's house.....	200	00		
Telephone and connections, &c.....	220	00		
Fuel and light.	462	52		
Sundries.	116	23		
Repairing buildings and tank for testing meters.....	1230	00		
			8829	63
Work Shop at Wheel House.				
Wages.	123	15		
Materials, iron, copper, &c.....	140	90		
			264	05
Meter Department.				
2 inspectors.....	1426	25		
Testing, placing and repairing.....	2113	84		
New Meters.....	3768	56		
			7308	65
Engine House at McTavish Reservoir.				
One stoker and one asst. engineer...	1063	30		
Fuel for engine.....	1208	70		
Oil, tallow, &c.....	58	78		
Repairing building.....	36	25		
do machinery.....	135	37		
do chimney.	74	11		
			2576	51
Carried over.....			70399	37

Brought forward.			**70399 37**
MISCELLANEOUS.			
Contingencies for Office, drawing paper, &c	138 14		
Postage stamp, carr. hire, sundries...	188 00		
Horsekeep, Superintendant.	650 00		
Damages	434 00		
School taxes and assessments outside municipalities	1040 62		
		2450 76	
STAFF.			
Superintendent	3500 00		
Asst. do	2000 00		
Draughtsman	936 00		
1st Clerk	1000 00		
2nd do	600 00		
3rd do	800 00		
		8836 00	
RAISING BANK OF TAIL RACE		4615 66	
Total			86301 79

LOANS.

PIPE LAYING.

Wages.	43516 65	
Tin, lead, lead pipes, &c	8656 32	
Copper, brass works, &c	2506 49	
Timber	346 23	
Bricks, lime, sand.	766 21	
Drain pipes, cement, &c	345 99	
Special castings	7899 85	
Iron, steel	761 81	
Tools, packing	658 83	
Wr't. iron pipes.	96 86	
Carried over	65555 24	86301 79

Brought forward	65555 24	86301 79
Cast iron pipes	40930 28	
Valve stones	452 25	
Sundries—Paving, &c	2460 00	
Rock excavation, &c. in St. Jean Bte Ward	1333 31	
New engine	45646 78	
do flood gates	7322 20	
Keefer's report	143 00	
Inundation Committee	39 29	
Job account	667 79	
St. Jean Baptiste Ward, coals	43 75	
Small pox Hospital	1359 67	
New aqueduct	167 87	
Total		166621 43
Grand total		$252923 22

The difference between the amount appearing in this statement and the figures of the Auditor's report represents the unpaid warrants outstanding at the close of the year.

No. 14—Inventory of Stock on hand January 1887.

DESCRIPTION.	30"	24"	16"	12"	10"	8"	6"	4"	3"
New Cast Iron Pipes (ft).	1300	408	492	3148	124	1035	12861	3141	0
Cast Iron Pipes (old)	.....	0	0	0	0	0	3708	499	144
Stop Valves	2	4	2	0	0	5	5	3	20
Stop Sockets	7	25	8	27	21	13	38	17	12
Cast Iron Caps	3	0	0	12	6	3	16	20	6
Cast Iron Plugs	0	3	0	12	4	5	5	3	5
Cast Iron double Bends	0	0	0	0	0	0	3	7	0
Cast Iron Elbows	0	0	0	17	6	0	4	5	0

Size.	30x24	30x12	30x6	30x4	24x24	24x12	24x10	12x12	12x10	12x6	12x4	10x10	10x6	10x4
Cross pipes	2	4	1	1	5	7	2	2	7	4	1	1	2	1

Size.	8x8	8x6	8x4	6x6	6x4	4x4	4x3
Cross pipes	6	18	11	2	6	0	4

Size.	30x24	30x12	30x4	24x8	16x10	12x12	12x10	12x8	12x6	1?x4	10x10	10x8	10x6	10x4
Tee Pipes	1	5	1	4	1	8	6	1	0	10	1	7	6	3

Size.	8x6	6x6	6x4	4x4
Tee Pipes.	7	12	20	47

BREECHES.							TAPERS.						
30x30	30x24	24x24	12x12	12x10	10x10	6x6	30x24	16x12	12x10	10x8	10x6	8x6	6x4
4	2	1	1	2	5	6	7	1	3	2	5	6	11

INVENTORY—*Continued,*

New Hydrants	7
Cast Iron fender posts	60
Hydrant covers, assorted	87
Pieces for lengthening hyd'ts	39
Hydrant sleeves	1
Assorted valves covers	22
Hydrants already used (ass)	27
Drinking troughs for cattle	2
Street watering nozzles (brass)	481
" " " (iron)	87
Hydrant nozzles	43
Assorted spindles	70
Rods for stop cocks assorted	115

2" Cocks for iron pipe	3
1½" " "	15
Pneumatic cocks	0
1" " "	1
⅝" " "	15
½" " "	169
1" Coupling cocks	73
⅝" " "	30
½" " "	3
3 way cocks	25
1½ nozzles	12
1" nozzles	18
⅝" "	14
½" "	53
1" Unions	246
⅝" "	285
½" "	593
¾" and ½" Y's	109
⅝" Crosses	62
1" and ⅝" T's	113
Assorted covers for boxes	60
2" Iron pipes	40
1½" "	34
1¼" "	21
1" "	40
¾" "	100
1" Lead pipes (lbs)	18200
⅝" " "	744
½" " "	2850
535 Bars pig lead	69550
Block tin (lbs)	110
1/16" Brass tubing (lbs)	30
1½" Iron boxes	7
1" "	30
Valve stones (large)	10
Valve stones (small)	8
Single service stones	14

No. 15.—SCHEDULE shewing the number of Assessed Dwellings, Stores Shops, Offices, Warehouses, Manufactories, Hotels, &c., in the City of Montreal, for the year 1886–87, with the Assessed Water Rates thereon.

DWELLINGS.

Number Assessed.	Tenanted.	Vacant and not supplied.	Yearly Rate.	Number Assessed.	Tenanted.	Vacant and not supplied.	Yearly Rate.
3586	3560	26	$5.00	29896	29718	178	.....
3960	3942	18	5.75	63	63	....	$31.25
4451	4431	20	6.50	249	249	....	32.75
4054	4042	12	7.25	37	37	....	34 25
2343	2328	15	8.00	4	4	....	35 00
2002	1982	20	8.75	18	18	....	35.75
786	778	8	9.50	95	95	....	36.50
1663	1656	7	10 25	14	14	....	37.25
222	222	....	11 00	5	5	....	38.75
1463	1455	8	11.75	163	163	....	40.25
234	234	....	12.50	6	6	....	41.75
771	754	17	13.25	9	9	....	43 25
386	381	5	14 00	33	33	....	44.00
613	613	....	14 75	1	1	....	46.25
152	150	2	15.50	93	92	1	47.75
487	487	....	16 25	24	24	....	51.50
31	31	....	17.00	1	1	....	53.75
567	561	6	17.75	60	60	....	55.25
36	31	5	18.50	10	10	....	59.00
267	262	5	19 25	60	60	....	62.75
46	46	....	20.00	4	4	....	66.50
301	299	2	20.75	16	16	....	70.25
126	126	....	21.50	1	1	....	75.75
306	306	....	22.25	23	23	....	77.75
26	26	....	23.00	2	2	....	85.25
142	141	1	23.75	10	10	....	92.75
1	1	....	24.50	7	7	....	107.75
415	414	1	25.25	1	1	....	115.25
175	175	....	26.75	4	4	....	122 75
16	16	....	27.50	1	1	....	137.75
122	122	....	28.25	1	1	....	152.75
143	143	....	29.75			....	
3	3	....	30.50			....	
29896	29718	178		30911	30732	179	

SCHEDULE showing the number of Assessed Dwellings, etc.—*Cont.*

STORES, SHOPS, OFFICES, &c.

Number Assessed.	Tenanted.	Vacant and not supplied.	Yearly Rate.	Number Assessed.	Tenanted.	Vacant and not supplied.	Yearly Rate.
1184	1174	10	$ 4 00	6597	6493	104	
685	675	10	5 00	20	20	....	$58 00
1194	1172	22	6 00	2	2	....	60 00
324	323	1	7 00	31	31	....	62 00
161	448	13	8 00	1	1	....	64 00
152	151	1	9 00	17	17	....	66 00
547	532	15	10 00	6	6	....	70 00
75	75	...	11 00	25	25	...	74 00
251	253	1	12 00	1	1	....	80 00
54	54	....	13 00	22	22	....	82 00
343	339	4	14 00	6	6	....	90 00
27	27	....	15 00	2	2	....	94 00
127	125	2	16 00	10	10	....	98 00
25	21	4	17 00	13	13	....	102 00
231	230	1	18 00	5	5	....	114 00
5	5	....	19 00	9	9	....	122 00
96	95	1	20 00	2	2	....	130 00
7	7	....	21 00	1	1	....	134 00
176	173	3	22 00	2	2	....	142 00
1	1	....	23 00	1	1	....	146 00
36	36	....	24 00	1	1	....	154 00
4	4	....	25 00	13	13	....	162 00
122	117	5	26 00	1	1	....	182 00
1	1	...	27 00	1	1	....	222 00
23	23	...	28 00	1	1	....	230 00
76	74	2	30 00	1	1	....	242 00
4	4	....	31 00	2	2	....	262 00
24	23	1	32 00	1	1	....	263 00
98	94	4	34 00	1	1	....	282 00
11	11	....	36 00	1	1	....	290 00
43	42	1	38 00	3	3	....	323 00
4	4	....	41 00	1	1	....	342 00
97	94	3	42 00	3	3		402 00
14	14	....	46 00	1	1	....	482 00
1	1	...	47 00	1	1	....	522 00
55	55	...	50 00	2	2	....	642 00
14	14	....	54 00	1	1	....	820 00
2	2	....	56 00	1	1	....	930 00
6597	6493	104		6809	6705	104	

Schedule shewing the number of Dwellings, &c.—(*Continued.*)

HOTELS AND TAVERNS.

Number assessed.	Tenanted.	Vacant and not supplied.	Yearly Rate.	Number assessed.	Tenanted	Vacant and not supplied	Yearly Rate
99	99	.....	$12 00	399	399	.....	
79	79	.....	17.00	4	4	.....	$72.00
86	86	.....	22 00	2	2	.....	77.00
37	37	.....	27.00	5	5	.....	82.00
37	37	.....	32.00	1	1	.....	87.00
23	23	.....	37.00	2	2	.....	102.00
15	15	.....	42.00	2	2	.....	152 00
4	4	.....	47.00	2	2	.....	162 00
9	9	.....	52.00	1	1	.....	202 00
1	1	.....	57.00	1	1	.....	242 00
8	8	.....	62.00	1	1	.....	402.00
1	1	.....	67.00				
399	399			420	420		

Horses.		Cows.		Stalls.		Urinals.		Water Closets.	
No.	Rate.	No.	Rate.	No	Rate.	No.	Rate.	No.	Rate.
5087	$2.00	774	$1.00	410	$1.00	598	$1.00	605	$2.00
				300	2 00	35	1.50	501	3.00
						38	3.00	9247	4.00
						19	15.00	25	15.00
5087		774		710		690		10378	

SPECIAL RATES.

Bakeries.		Beer Bottlers.		Fountains.		Steam Engines			Sundries.	
No.	Rate.	No.	Rate.	No.	Rate.	No.	Horse power.	Total.	No.	Rate.
2	$3 00	2	$3.00	1	$3.00	2	¼	1	9	$ 5.00
4	5 00	5	5.00	21	5.00	6	1	6	1	6.00
5	8.00	4	10.00	3	9.00	12	2	24	1	8.00
13	10.00	1	12.00	5	10.00	9	3	27	6	10.00
1	00	1	15.00	3	12.00	13	4	52	2	15.00
19	00			1	13 00	7	5	35	1	17.00
10	5.00			2	15.00	10	6	60	1	25.00
3	18.00			1	16.00	8	7	56		50.00
3	20.00			1	18.00	3	8			00
3	25.00			2	20 00	4	9			0
3	30.00			2	30.00	6	10			0
				1	40.00	1	11			
				2	50.00	4	12			
						2	13			
							15			
66		13		45						

RECAPITULATION.

	Tenanted.	Vacant.	Total.
Dwellings	30732	179	30911
Stores, shops, offices	6705	104	6809
Hotels and taverns	420	0	420
Total	37857	283	38140

Steam engines	102
Special charges for manufactories, &c	150
Horse stalls	710
Water closets	10378
Urinals	690
Horses	5087
Cows	774

CASH RECEIPTS BY THE WATER DEPARTMENT.

During Civic year ending 31st December 1886.

For dwellings, shops, offices and hotels			$308964.78
" Water closets			36012.00
" Urinals			974 50
" Horses			8958.00
" Cows			705.00
" Horse stalls			914.00
" Steam Engines			5058.00
" Permits for hose to water streets, &c			582.00
" " for building purposes			2748.02
" Private Fountains			260.00
" Manufactories, &c			1241.00
" Water supplied through meter outside the City Lim.	2429.19		
" " " inside "	59591 37		
			62020.56
" Rent of meters outside City Limits	97.84		
" " " inside "	3092.39		
			3190 23
			$521628.00
Miscellaneous			3263.42
Costs			61.53
			$524953.04
Less refunded			1517.63
Net collections			$523435.41
Amount returned into the Treasury in 1885			443897.58
Increase			$ 79537.83

City Treasurer office, Montreal April 1887.

CHAS. LAPIERRE.
Accountant

ANNUAL REPORT

OF THE

SUPERINTENDENT

OF THE

Montreal Water Works,

FOR THE

YEAR ENDING 31st DECEMBER 1887

Pirnted by Order of the Water Committee.

Montreal :
EUSÈBE SENÉCAL ET FILS, PRINTERS,
20 St. Vincent street.

1888.

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ANNUAL REPORT

OF THE

SUPERINTENDENT OF THE MONTREAL WATER WORKS

FOR THE

YEAR ENDING DECEMBER 31st, 1887.

To the

Mayor, Aldermen and Citizens of the City of Montreal,

GENTLEMEN,

I have the honor to submit my report for 1887, on the management of the City Water Works. The subject is divided as follows: 1st Aqueduct. — 2nd Pumping Works at Wheel House.— 3rd Work Shop at Wheel House. — 4th Tail Race. — 5th Pipe Track and Pumping mains. — 6th Reservoirs — 7th High Level Service.— 8th Pipe Laying. — 9th Maintenance of Distribution and Service Pipes.— 10th Consumption of Water.— 11th Meters.— 12th Administration.—13th General Remarks.—14th Appendix.

1st. AQUEDUCT.

Ordinary repairs were made to ditches, fences, bridges and bridge approaches. Two farm bridges were rebuilt and the Entrance bridges upper course of planking was renewed. This year similar repairs, tho' not so heavy as regards bridges, will be done.

The experience of each succeeding year shows more fully than did that of its predecessor, the utter insufficiency of our Aqueduct to furnish pumping power for the City's steadily increasing

requirements. Longer delay in constructing the projected large Aqueduct means heavy expenditure in the near future, for steam power.

Last year 75 % of the water used was pumped by water power and cost for pumping $5,500. The other 25 % by steam cost $23,700. These figures are significant, especially when taken in connection with the fact that the limit of the pumping power of the Aqueduct having been reached some years since, the percentage pumped by water power decreases annually whilst that by steam of course increases proportionally.

I should be doing less than my duty, if I failed to avail myself of this opportunity to recommend most emphatically the immediate resumption of the construction of the new Aqueduct.

2nd. PUMPING WORKS AT WHEEL HOUSE.

The pumps and wheels are in working order, but, as reported last year the pumps of wheels Nos. 2 and 3 are much worn from long service and wheel No. 2 is somewhat shaky from the same cause.

The large mortice wheel of No. 1 has to be recogged. No. 4 which is comparatively new, is all right for the present.

No. 1 Engine, New Worthington, 10 millions, has not yet been taken over by the City from the Messrs. Worthington. The delay is owing to the City's inability to furnish steam at the pressure prescribed by the contract, in consequence of which the test or duty cannot be made. Boilers to furnish the steam required are now in process of construction and in the mean time the Engine is pumping for the City, tho' not with that economy it is hoped she will develop.

No. 2 Engine, the Gilbert, 3 millions, did no work.

No. 3 Old Worthington 8 millions worked well and having had some repairs done, is now in good working order.

A contract was made with Mr. Geo. Brush, last Fall, by which he was to furnish to the Department 3 Heine safety boilers, to be in working order by 15th Dec. last. There have been delays, and it is probable the boilers will be ready some time in April.

Some of the buildings need slight repairs and painting.

Spontaneous combustion took place in the coal. The expense thereby incurred was considerable, but was partly covered by insurance.

For full details as to the pumping works see the report of Mr. Kearney, the Engineer in charge. His report will be found in the appendix, page 6

The total quantity of water pumped by water power during the year is 3,565,335,000 gallons, with an expenditure of $5,544 $\frac{22}{100}$ as shown in Schedule No. 13, under heading "Wheel House", making 1.55\frac{1}{2}$ per million of gallons raised 169 feet or 0.00 $\frac{92}{100}$ per foot high.

The total quantity pumped by steam during the same period is 1,199,706,000, with an expenditure of $23,729.08 or $19.77 $\frac{81}{100}$ per million gallons raised 169 feet or $0.11 $\frac{7}{10}$ per foot.

Schedules Nos. 1, 2 and 3 in appendix show the work done by each of the pumping machines at the low level pumping station.

The following table exhibits the cost of raising 1 million gallons 1 foot high by water and by steam, for the last thirteen years and the average yearly cost, by each method, for that period.

YEAR.	BY WATER.	BY STEAM.
1875	$0.0200	$0.119
1876	0.0140	0.144
1877	0.0158	0.080
1878	0.0106	0.170
1879	0.0093	0.119
1880	0.0120	0.123
1881	0.0136	0.121
1882	0.0118	0.258
1883	0.0135	0.134
1884	0.0124	0.211
1885	0.0102	0.094
1886	0.0096	0.138
1887	0.0092	0.117
Average of 13 years	0.0125	0.141

VI

3rd. WORK SHOP AT WHEEL HOUSE.

The efficiency of the machine shop at Wheel House was increased by the addition of two new lathes. The work turned out there was as follows.

NEW WORK.

51 new hydrants.
35—4 inch valves.
39—6 do do
1—8 do do
1—10 do do
6—12 do do
1—12 inch valve spindle.
2—6 do do do
1—4 do do do
467—1 inch service caps.
24—1½ do do
2512—½ inch pneumatic stop valves.
594—½ do 2 way branches.
142—½ do 3 way do
133—½ do 4 way do
44 new picks.
19200 pieces air tube couplings.
5714 air tube caps.
940—⅝ nozles.
313—½ inch nozles.
71—⅝ pneumatic stop valves.
14—1 inch do do
1—½ inch x ⅝ 3 way stop cock.
8—1 inch stop cocks for iron pipe.
4 - 1½ inch stop cocks for iron pipe.
17 ½ inch steel nozle drills.
12—⅝ do do do
24 hydrant watering nozles.
6 new drilling frame chains.
102—⅝ x ½ inch reducing couplings.
24—⅝ meter couplings.
8—⅝ meter elbow couplings.

4 castings of Robertson ball cock.
3—⅝ Union meter covers.
6—1 inch meter couplings.
6 steel pins for making lead joints.
5 meter flanges drilled.
2 setts grate bars 180.
21 valve springs.
12 wrt. iron straps.
16 bolts and nuts.
3 brass spindles for steam valves.
50—1 inch bolts and nuts for boilers.
10 hydrant sockets.

Besides which the following repairs were done.

1 iron ladder repaired for Reservoir.
1 gauge cock do do
1—12 inch valve.
1—6 do do
1—4 do do
92—⅝ union meters.
18—1 inch union meters.
7 hydrants.
11 do rods.
165 grate bars.
25 fire irons.

And 11,676¾ lbs. of brass castings, delivered from the brass foundry.

4th. TAIL RACE.

The work done here was inconsiderable. The wood work of the Bridge at Lower Lachine Road must have extensive repairs this year.

5th. PIPE TRACK AND PUMPING MAINS.

Very little was spent under this head.

It is proposed at an early date to complete the doubling of the 30 inch main between the River St. Pierre and the Lachine Canal. It is advisable that it should also be duplicated north of the Canal towards Dorchester street with the view to supplying St. Cune-

gonde and St. Henry when those municipalities are annexed to the City, which will probably be before very long. A single 30 inch should also be laid from the Wheel House to join the existing one near the River St. Pierre, so that when the water power is increased the 30 " mains, now used almost wholly for the supply from the steam engines may be equally available for that from the water wheels.

6th. RESERVOIRS.

The High Level Reservoir is in pretty fair order and requires but very small expenditure this year. McTavish Street Reservoir requires rather extensive repairs. The front walls and the old part of the division wall, have been in a leaky condition for some years and received slight repairs from time to time. These walls were built about 30 years ago and in their construction a perishable black stone quarried on the site, was used. In carrying out temporary repairs many of the blocks, even below water level, have been found split, and much more is this the case above water. As the matter stands at present there is no danger of any calamity from a sudden out-rush of water. The damage here to be prevented is principally waste of water and injury to adjoining property from continual wetting of the ground. The waste, tho' impossible to estimate with any degree of accuracy is certainly very considerable.

As to damage to property in the vicinity up to the present, the Corporation's own property has suffered most. It was feared that the foundation for the new boiler put in by the Messrs. Gilbert & Sons, might be endangered by the action of the water, but this was prevented by laying a tile pipe drain, to conduct the water across the boiler house.

The floor of the engine house for the new engine is also invaded by the water and may be damaged so as to necessitate going deeper than was intended for the engine foundations.

Measures are being taken to lead the water away through tile pipe drains so that the least damage possible may be done.

The Messrs. Gilbert & Sons will no doubt look to be reimbursed whatever extra expense they may be put to through these leaks.

No further appreciable damage to property in the vicinity has

been done yet, but as these leaks appear to be on the increase, there is no knowing what claims proprietors may bring forward.

The necessary repairs will be costly and tedious, perhaps extending over some years. The most troublesome feature is the leak in the division wall, making it very difficult to keep dry, either side of the Reservoir.

The Council will be asked for an appropriation for this work. Any estimate of the amount ultimately required to complete the repairs, can only be approximate.

7th. HIGH LEVEL SERVICE.

The Engine for this service performed its work as well as in former years, but the consumption in the district having increased the Water Committee deemed it expedient to have a reserve pumping power in case of accident or break down. They therefore entered into contract with Messrs. E. E. Gilbert for an engine and boiler capable of raising 2 millions gallons per day.

This involved building a new boiler house and coal shed and the alteration of the old boiler house to accommodate the new engine.

The old chimney stack being in very bad condition it was resolved to build a new and higher one. Separate contracts were let for the chimney, the brick and stone work of the buildings and wood work and painting of them. The contracts were let late and the bad weather coming on, all of them are behind time. This new pumping apparatus when complete, ought to cheapen considerably the cost of pumping for the High Level.

Schedule No. 4 in the appendix shows the work done by the small Worthington engine, (up to the present the only one at this station), viz: 63,361,400 gallons pumped 213 feet high in 3,736 hours, at a cost of $2,525.66 making $39 86 $\frac{11}{100}$ per million gallons raised, or $0.18 $\frac{77}{100}$ per million raised 1 foot.

The cost of raising 1 million gallons 1 foot high, was :

In 1876	$0.240
" 1877	0.253
" 1878	0.355
" 1879	0.283
" 1880	0.274

In 1881	0.226
" 1882	0.256
" 1883	0.286
" 1884	0.318
" 1885	0.376
" 1886	0.250
" 1887	0.187
Average of 12 years	0.275

8th. PIPE LAYING.

The total length of cast iron pipe laid during the year 1887 was 28,343 feet, viz: 5,300 feet of 24 inch, 4,432 feet of 12 inch, 819 feet of 10 inch, 67 feet of 8 inch, 15,566 feet of 6 inch, and 2,159 feet of 4 inch, 819 feet of 4 inch and 407 feet of lead pipe were taken up.

There were 62 valves laid, 1 of 24 inch, 6 of 12 inch, 1 of 10 inch, 1 of 8 inch, 38 of 6 inch, and 15 of 4 inch. 40 fire hydrants were put in.

There were 2,195 houses supplied with water. 36 feet of 2" wrought iron and 42,900 feet of lead pipe were laid. 11 brass cocks (old style) and 2,184 pneumatic cocks were put down.

This work added to what had been done up to the end of 1886 makes a total of 23,553 lineal feet of 30 inch pipe, 44,603 of 24 inch, 2,694 of 16 inch, 50,079 of 12 inch, 77,975 of 10 inch, 6,920 of 8 inch, 221,667 of 6 inch and 348,961 of 4 inch, 2,095 of 3 inch and 11,531 of smaller mains, making a grand total of 790,078 feet or 149 $\frac{64}{100}$ miles of main pipes.

There are 13 valves of 30 inch, 33 of 24 inch, 4 of 16 inch, 69 of 12 inch, 92 of 10 inch, 29 of 8 inch, 339 of 6 inch, 640 of 4 inch, 38 of 3 inch and 1 of 2½ inch, making a total of 1,258

There are 985 hydrants besides 58 on private property.

The number of water services is 32,176. The work done under the head of "Pipe laying", for private persons or firms, was 6 hydrants, 14—6" valves, 15—4" valves. 42 ft. 12" main, 588 ft. of 6" and 1,229 ft. of 4 inch.

9th. MAINTENANCE OF DISTRIBUTION PIPES, SERVICE PIPES, HYDRANTS AND PUBLIC FOUNTAINS.

This service received the usual attention. A reference to the report of Mr. Lagacé, foreman, and to tableau No. 6, both documents to be found in appendix, will show in detail what was done in the way of repairs, to mains, valves, hydrants, service pipes, &c.

A close inspection for leaks, on services and main pipes discovered a considerable number and there are doubtless many more which further inspection will disclose.

In St. Gabriel ward the pipes have been found to be in a very bad condition having been a constant source of expense for repairs during the winter of '87 to '88.

10th. CONSUMPTION OF WATER.

The total quantity of water pumped during the year is 4,765,041,000 gallons or a daily average as shown by Schedule No. 7, of 13,055,000 or an increase of 412,000 over the daily average of 1886. Of the above quantity pumped, 468,974,000 gallons have been metered and charged for at meter rates.

For flooding rinks 196,500 gallons were used, 3,265,200 for fires, 43,596,000 for watering streets and 17,928,000 for public fountains.

At the fountains and latrines on wharfs 8,067,000 gallons were used and for lubricating the steps of the turbines at the pumping works 21,896,500 gallons. The balance 4,201,118,000 gallons is that part of the City's consumption which is paid for at rates based on rental, and includes waste.

11th. GENERAL REMARKS ON THE DISTRIBUTION MAINS AND FIRE SERVICE.

In St. Mary's and Hochelaga wards from the 24" pipe of Delorimier Avenue another 24" main was laid along Ontario to Desery street, which was connected to the 10" pipe of Notre Dame by a 12 inch through Harbour street, thus effecting for Hochelaga ward an improvement much needed and which places that ward on an equal footing with the rest of the City as regards water supply.

In St. Jean Baptiste ward the 12" main of St. Lawrence street has been extended to Mount Royal Avenue, besides which nearly

Report of the Assistant-Superintendent of Water Works, on Meters and House-Service Inspection.

Montreal, March 10th 1888.

LOUIS LESAGE, Esq.,
Supt. M. W. W.

Sir,

I beg to submit my report on the operations of the Meter and House-Service Inspection branches of the Water Department.

METERS.

The number of meters in use at the end of the year was 594 including those at Wheel House. This is an addition of 45 to the number in use in '86. The City owns 547 of those in use and the other 47 belong to private individuals or business firms.

There were 89 new places metered and 46 meters that had been in use, were discontinued.

There were 166 changes of meters made, for various reasons, some being out of order, others being too small, &c.

There were 13 meters damaged by frost and 2 of these were totally destroyed. There were also 2 destroyed by fire.

The Department purchased during the year 11 "Gem" and 2 "Crown" meters after which, the appropriation being exhausted, persons who required meters had to buy for themselves.

This system is not a desirable one, as the Department has a better control when owning the meter and the rent charged is enough to pay a proper interest on first cost and provide a fund for renewal when the meter is worn out. Besides which the expenditure for first cost and the trouble of purchasing has a tendency to discourage individuals from commencing the use of meters,

whereas the very reverse ought to be the policy of the Department, as selling by meter is more profitable than by the rental system.

There were 9 meters at the Harbour latrines and fountains where 8,067,000 gallons of water were used, a diminution of nearly 2½ million gallons on the consumption of the previous year. The City supplies this water to the Harbour Commissioners, free.

There were 5 meters at the Wheel House, 3 to measure the water used at the steps of Turbines and 2 for boiler supplies.

The water sold by meter last and the previous year was distributed as follows :

	Millions of Gallons in 1886.	Millions of Gallons in 1887.
Railways (including City Passenger)	139.01	152.86
Factories and Engines	71.43	97.76
Elevators (exclusive of those at Hotels & Rys.)	57.48	82.97
Breweries	28.93	23 62
Hotels	28.84	33.40
Schools, Convents and Colleges	14.74	15.67
Hospitals and Homes	5.38	6.22
Churches, for Organs	3.19	3.89
Miscellaneous, as Photographers, Livery stables, Skating rinks, Slides, Horse-Exchange, Restaurants, Dyers, Florists, &c	16.49	16.95
Outside Municipalities	26.03	35.63
Totals	391.52	468.97

Showing an increase of nearly 20 p. c. in 1887 over 1886.

Comparison of Meter Rates with Rates based on Assessed Rental.

		Gallons.
The total quantity of water pumped in 1887 is		4,765,041,000
That bringing no direct revenue, such as for watering streets, fires, fountatns, &c., &c., &c., is.		94,949,000
The difference is that from which revenue is derived, viz		4,670,092,000
That charged for by meter is		468,974,000
Balance, being that charged for at rates based on rental and at special rates and including waste		4,201,118,000
The revenue from water in 1887 was		$542,004.19
That from metered water was,		
For water	$66,213.63	
For rent of meters	3,417.11	
		$69,630.74
Balance, being revenue from rates based on rental and sundry special charges		$472,373.45

Total water from which revenue is derived...gallons		4,670,092,000
Revenue from same		$542,004.19
being at the rate of 11 $\frac{6}{10}$ cents per 1000 gallons...		
Total water sold at rates based on rental ....gallons		4,201,118,000
Total revenue from same		$472,373.45
being at the rate of 11$\frac{1}{4}$ cents per 1000 gallons.		
Total water sold at meter rates .....gallons		468,974,000
Total revenue from same		$69,630.74
being at the rate of 14 $\frac{85}{100}$ cents per 1000 galls.		

The revenue from metered water is about 13 o/o of the whole water revenue, and the quantity sold by meter is 10 per cent of the whole quantity sold.

N. B.—The water supplied by meter to the Village of St. Gabriel (now St. Gabriel Ward), has not been paid for, a circumstance which affects materially the value given above, for metered water per 1000 gallons.

A general inspection of water fixtures on premises where meters are in use, commenced in 1885 by the Chief Inspector, has been completed. The results are recorded in alphabetical order, for reference, as may be required.

A monthly inspection and reading of all meters in use, has been kept up as usual.

HOUSE SERVICE INSPECTION.

This Inspection has been kept up throughout the year, five inspectors being latterly engaged on it, viz.: one for St. Gabriel Ward in addition to those formerly employed.

The result of this inspection was the discovery and stoppage of waste from defective fittings as enumerated below, viz.:

Bib Cocks	out of repair	1600
Urinal do	"	64
Ball do	"	1104
Stop do	"	44
Closet do	"	133
Basin do	"	154
Closet Valves	"	141
Water Closets	"	30
Pipes burst	"	282

The estimated average waste per hour from each of the above named defective fittings was 10½ gallons. Besides these the Inspectors found 55 taps left open to prevent freezing, wasting on an average 25 gallons per hour, 33 taps open to flush drains wasting 46 gallons per hour each, 177 cases of using water illegally for building purposes, 98 using hand hose illegally, 17 using illegally for mfg. purposes, 2 using hydrants without permits, 1 hydrant found open. In all cases the waste was arrested as soon as discovered.

The number of prosecutions in the Recorder's Court was 61.

Besides the ordinary inspection, the Foreman of distribution made a night inspection which assisted materially in checking waste.

Your obdt. servt.

B. D. McCONNELL,

Assistant.-Supt. M. W. W.

PUMPING WORKS, JANUARY 9TH 1888.

LOUIS LESAGE, ESQ.,

Superintendent Water Works.

DEAR SIR,

My report for the year ending the 31st Dec. 1887, is respectfully presented.

No. 1 WHEEL HOUSE.

No repairs were done to this building. All that appears at present necessary, is, the renewing of a section of the gallery floor, some slight repairs to the sheet iron roof, frost traps in the discharge flume, the painting of the doors and windows, and thorough washing of the walls and ceiling.

Nos. 2, 3 & 4 WHEEL HOUSE.

No repairs were done to this building. Its present requirements are the renewing of a portion of the flooring immediately in front of the Breast Wheel and the painting of the windows, doors and hand railing. The plank covering of the head races between the Wheel House and basin will likely have to be renewed and the walls and ceiling washed.

WORK SHOP.

There were no repairs done to this building nor is it likely to require any during the year. Two lathes were added to the shop tools which proved very serviceable. I am much in need of another short lathe that could be used with great advantage to the Department.

BRASS FOUNDRY.

No repairs were done to this building, all that is necessary is the painting of the roof.

Notwithstanding that the pneumatic stop cocks are cast outside, this shop is hard pushed to furnish us with the other required brass castings.

Nos. 1 & 2 ENGINE HOUSE.

The repairs to this building consist, of the patching of the ceiling and other parts, the painting of the whole interior, windows, double windows, doors, roof and outside cornice. The building is at present in good order.

BOILER HOUSE.

No repairs worthy of mention were done to this building. The removing of the old battery of tubular boilers and the placing in position of the proposed new ones, may so damage the building and cause such alteration to meet the requirements of said new boilers as cannot at present be seen.

COAL SHED.

Repairs were done to the door frames and platforms of this building, said platform is now considerably damaged owing to the uprooting of the same to get at that portion of the coal that was found to be on fire. Ventilators had to be cut in the end of the shed. The whole exterior presents a very dirty appearance from the smoke of the burning coal escaping through the crevices. Two coats of paint will be necessary to put it right.

No. 3 ENGINE HOUSE.

This building underwent no repairs. The doors and windows should be painted, and a new floor laid in the basement. Experience has proved that wooden floors are not serviceable here. Asphalt or granolithic pavement would be the proper material for this floor. The walls and ceiling should also be washed.

THE DWELLINGS.

No repairs were done to these buildings. The roof, cornice, windows and double windows, together with the whole outside wood work generally should be painted.

THE GROUNDS.

The grounds were kept in good condition. The railing in front of the Wheel House on the road and arch retaining wall were repaired and painted. The waste weir covering in front of the work shop will require renewing, and about 25 trees should be planted.

No. 1 WHEEL.

This wheel made a remarkably fine run having been stopped only 53 hours for all purposes during the year. All the repairs found necessary were the renewing of two of the stay bolts in one of the pump valve chests. The wooden cogs in the large mortice wheel will require to be renewed, and possibly one of the valves. This with the ordinary keeping up, is all that appears to me at present necessary.

No. 2 WHEEL.

The old Breast Wheel again gave a very good account of itself, and although very shaky staggered through the year very well, often and careful packing is required, also careful attention to the upright and diagonal arms. The condition of this wheel and pumps are such that an accident may be looked for at any time in spite of the sharpest attention.

No. 3 WHEEL.

The repairs to this wheel consist of the renewing of one of the joints connecting the delivery pipe from one of the pumps to the air vessel, which gave a good deal of trouble constantly working and causing considerable loss by leakage into the pump room.

The joint was remade and gave no trouble since a new globe valve was put on the meter pipe leading to the foot-step. The pumps of this wheel are in the same worn condition as those of he breast wheel.

No. 4 WHEEL.

This wheel required only the ordinary keeping up, present indications are, that it is good for another year's run, without incurring much expense.

No. 1, NEW WORTHINGTON ENGINE.

This engine started on the 2nd of March and stopped on the 10th of April, doing the whole pumping service required by steam, between these dates. The engine worked well, giving very little trouble, pumping up to the full capacity when required. When the cylinders were looked into at the end of the run, one of the low pressure piston rings was found to be broken in two pieces, it was removed and a new one furnished by the Worthington Co. The engine was called into service again to do the pumping while the old Worthington engine was under repairs. This pumping was done low duty. The engine worked well with the exception of the heavy pounding of the water pump valves, and the noisy working of the air pump.

The independent condensing engine being placed central between the low pressure cylinders and water pumps immediately under the high pressure cylinders in the foundation gap, receives all the water and oil drips from the stuffing boxes, slides and other parts. The company should furnish the necessary pans and drip pipes and place the same in position in such a manner as will effectually trap and conduct away said oil and water drip into some recepticle sufficiently large to hold one day's gathering from which it could be removed from time to time.

The bed of said foundation gap is left in an unfinished condition. It ought to be finished by the contractor. Some trouble was experienced with the foot valve, the chain having got between the valve and the seat. With the present arrangement this may occur at any time. It should be altered so as to insure perfect working. A 4" drain pipe should be connected to the 30 inch suction at some point under said foot valve in order to drain said suction when it is found necessary to get at said foot valve for any purpose.

The lubricator furnished by the Company has proven to be a

dangerous nuisance it having broken many glasses sending the pieces in every direction, endangering the eyes of the men in attendance. The Company should replace it by one of those well known first class lubricators in the market.

The independent condensing engine was furnished with a common oil cup which never could be got to work satisfactorily with all the engineering genius the Company brought to bear on it. A sight feed lubricator is the proper modern appliance for constantly feeding oil to engines, and the Company should furnish one.

No. 2 ENGINE.

This engine is in the same condition as when last reported. No money having been furnished to put it in proper working order.

No. 3 ENGINE.

This engine was in need of a general overhauling for a considerable time. The many delays arising in connection with the completion of the New Worthington engine and boilers prevented the carrying out of this work. So urgently necessary did it become, that it was deemed advisable to send to the Worthington Company for a man to take charge of the new engine as it was still in the hands of the Company, while the old engine was undergoing repairs. The low pressure cylinders and pistons were examined, the tongue pieces, tension springs and piston rings, were set up and properly adjusted. The high pressure pistons were found in a leaky condition, there was only that done to them which could be done in a temporary way to tide over the winter pumping season in safety.

These pistons will have to be taken out next summer and put in first class order. The cast iron nuts retaining the steam slide valves in their proper position on the valve rods were found cracked and some of the bolts broken, the damaged nuts were removed and replaced with wrought iron ones. The tongue pieces in the rings of the balance valves were found out of position and so much worn that they had to be renewed. A portion of the cylinder and jacket drain pipes were found worn out and choked, they were put in proper repair. The foot valves, air

pump valves, and discharge valves were examined and put right. The water pump valves were found in very good order. The painting looks very shabby, the engine should be painted a-new.

No. 1 BATTERY OF BOILERS.

At the time of writing, this battery of boilers is being removed to make place for the proposed new battery in course of construction.

No. 2 BATTERY.

These boilers are no longer serviceable to furnish steam for the Worthington high duty engine, working high duty, 80 lbs. being absolutely necessary for the engine to work high duty. The boilers are locked up at 70 lbs., therefore they are serviceable only to furnish steam to the old engine or to the new working low duty.

No. 3 BATTERY.

This battery as usual continues to give good satisfaction. No repairs were found necessary during the year and from present appearances will only require the ordinary attention during the ensuing year.

PORTABLE STEAM PUMP AND BOILER.

This apparatus was not called into service during the year. It is in good order, ready for use.

Now that the Works are within the City limits and gas pipes laid up Center street close to them, I hope no time will be lost in furnishing the Works with gas light.

The incandescent light would be preferable if it could be served from a city center.

The placing of dynamos in our Works and taking the power from the Aqueduct would be likely to cause serious trouble at that portion of the year when it is so important that the water and ice on the Aqueduct should be maintained at the proper level.

I earnestly tender you my sincere thanks for the able assist-

ance you so kindly rendered me in the discharge of my duty during the year.

The whole respectfully submitted.

I remain yours very truly,

D. KEARNEY, ENGR.

WHEEL HOUSE, FEBRUARY 14TH 1888.

SUPPLEMENT TO ANNUAL REPORT.

THE TELEPHONE.

The Telephone service is very unreliable. There must be something wrong in connection with it that should be righted. I feel that I cannot too strongly impress upon you the necessity of having it put in a good serviceable condition.

The importance of the pumping station having a reliable means of communicating with all stations of the service cannot be over rated.

Yours very truly,

D. KEARNEY, ENGR.

WATER WORKS SHOP, JANUARY, 1888.

TO LOUIS LESAGE, ESQ.,

Superintendent Water Works,

CITY HALL,

DEAR SIR,

I respectfully submit the report of the repairs done to Main pipes, Stop valves, Hydrants, Service pipes, and improvements to mains, &c., during the year ending December 1887, which are as follows:

REPAIRS TO MAIN PIPES AND STOP VALVES.

There have been twenty-nine breaks on main pipes. Ninety-two joints were blown out on said mains. Fourteen valve spindles, and six stop valves were renewed. Schedule No. 6 shows the sizes and number of main pipes, and valves repaired, &c.

For years past a considerable number of blind leaks caused a great increase in the consumption of water and as it was impossible to locate them in day time on account of noise caused by the traffic of vehicles, &c., a general examination and test of the water pipes became necessary during the silence of night. I took charge of that examination with the following result.

On McCord street I found twenty-two leaks, fifteen joints blown out on the 12" main. From William street to below Olier street the joints on the 12" main may blow out any time for the reason stated in my former reports. The other seven leaks were on valves and services,which were broken on drains.

On William street thirteen leaks were located; four on the 6" main which I found very weak in some parts and holes corroded through in two places. If this street is to be permanently paved a 10" main should be laid in it from McGill street 12" main to the intersection of the 10" main at Guy street, and Ottawa street. This 6" main now in may last for years yet.

One hundred and twelve leaks were located and repaired in the following streets : some of them were on pipes to hydrants, some on main pipes and the greater number on services broken from old age, drain cuts made across them, &c. :

St. James, Notre-Dame, Craig streets.

The 4" pipe on Craig from little St. Antoine to St. James street and St. James 4" at Craig street are very old and badly corroded and the water was running through holes that were corroded through.

Visitation, Murray, College, Dorchester, Inspector, Ottawa, Queen, Colborne, Chaboillez Square, St. Antoine, St. Maurice, St. François-Xavier, McGill, St. Peter, St. Dizier, St. Sulpice, Mountain, Aqueduct, Sophia lane, Eleanor, Grey Nun, Young, Congregation, Favard, Richardson, Prince, Duke, St. Lawrence, Bleury, St. Catherine, Shannon, Bisson, St. Margaret, Wellington, King, Barré, St. Lambert Hill, St. Vincent, St. Gabriel, Sanguinet, Mondelet, Commissioners, Smith, St. Helen, Foundling, Wolfe, &c.

There are sounds of leaks in most of the above named streets yet. The action of the flood also caused a good many of the leaks found in the streets already named. We also found a great number of people wasting the water inside their houses in allowing their water taps to run.

We shut some and others stopped on being notified to do so.

If Notre-Dame street is to be permanently paved a careful test of all the pipes therein will have to be made as the pipes there are very old and sounds of leaks are heard yet on them.

St. James street where new asphalt pavement was made, was thoroughly tested and made sound before said pavement was made.

This night test of water-pipes, &c., greatly reduced the extraordinary waste of water and it will have to be continued next summer.

The stop-valves in the following named places require to be changed.

Campeau, South side of Craig.....1—4"
Amherst & Notre-Dame.....1—4"
Wolfe, North side of Notre-Dame.....1—4"

Grant & Notre-Dame.....1—6"
Water & Brock.....1—6"
Common & Prince.....1—6"
Canning, South side, Notre-Dame.....1—6"
Shearer & St. Patrick.....1—6"
Aylmer & Sherbrooke.....1—4"
Durocher & Sherbrooke.....1—4"
Logan, East of Visitation.....1—4"
St. Thérèse & St. Vincent.....1—4"
St. George, South of Dorchester.....1—4"
Belmont & Beaver Hall.....1—6"
Seigneurs & Notre-Dame.....1—4"
Sherbrooke, West of St. Lawrence.....1—10"
Dorchester, West side of St. Urbain.....1—10"
Dorchester, West side of St. Denis.....1—10"
Dorchester, East side of St. Denis.....1—10"
Dorchester, East side of Amherst.....1—10"
Dorchester, East side of Panet.....1—10"

IMPROVEMENTS TO MAIN PIPES.

Schedule No. 9 shows the improvements made during the year on main pipes, hydrants, &c.

All the pipes laid with dead ends, where it is practicable, should be extended and connected to the nearest point possible so as to give free circulation of the water through them.

In my last years report I mentioned a certain number of streets which could be done; but very few of them could be done last summer. Seigneurs street, South of Dorchester was graded last summer by Road Department, thereby leaving only two feet of covering over our main pipe, which will have to be lowered for a distance of two hundred feet. The 10" main on Commissioners street at Canadian Pacific Railway Depot, East of Jacques Cartier street will have to be altered and extended past new freight sheds a distance of about three hundred feet.

HYDRANT REPAIRS, &c.

One hundred and thirty hydrant valves were renewed, eighteen hydrants were replaced by non-freezing hydrants.

Four old hydrants were broken and replaced by same sort. Eight hydrant rods were broken and replaced.

The number of hydrants reported frozen was ninety; one thousand nine hundred and fifty times, which is a great improvement on the previous winter when they were reported frozen two thousand five hundred and sixteen times.

Hydrants should be put in the following streets : Cor. of Ontario and St. Elizabeth.

One at the upper end of main pipe on St. Christophe street.

Corner of Ontario and Gain streets.

One at the corner of Shaw and Nonancourt streets.

One at the corner of Lafontaine and Delorimier off the 24" pipe.

One at the corner of Mignonne and Delorimier Avenue off the 24" main.

One at the corner Craig and Delorimier Av. also off 24" main.

One on Gain street at upper end above Ontario street.

One on Shaw street also at the upper end.

One on north corner of Ontario on St. Hubert street.

One at the corner of Park Av. and Bagg street.

The 4" pipe on the hydrants, cor. St. Catherine and Delorimier Av., cor. Dorchester and Delorimier Av, should be changed and replaced by a 6" pipe and hydrants to fit on said pipe. One hydrant should also be put above or near Mann's below old toll gate on Papineau Road.

The wells of the old kind hydrants should be packed early in the fall so as to prevent them from freezing in the most exposed places in the city, and said hydrants should be replaced by non-freezing hydrants as soon as possible.

REPAIR TO SERVICES.

Thirty-two service pipes were found broken over drains. Eighty-one couplings were found leaking, some at stop-cocks and some at nozles on main pipes. One hundred and ninety-four boxes were replaced by iron ones, ninety service pipes were found choked, eleven services were frozen in the street.

One hundred and twenty-three were frozen in walls by cold cellars. Forty-six pneumatic stop-cocks were dug to repair tubes

which were split or broken most of them by builders or other parties interference.

Two hundred and three old stop cocks were replaced by pneumatic valves or stop-cocks. All old kind stop-cocks on St. Lawrence street east side from Craig to Ontario were replaced by pneumatic valves. Our plumbers had to attend to the repairs above mentioned, also to all the new services that were put in through the city during the past year. The number of services put in with pneumatic cocks is, 2363. There are now 4519 in use. Schedule No. 6 shows repairs done to services, &c. Schedule No. 9 shows the number of services put in the different wards with pneumatic stop-cocks, &c.

New flag sidewalks have been laid on the following streets : Commissioners, St. Peter, Wellington, William, Notre Dame, St. James and other streets. In these streets the wooden boxes are all covered up and in most cases unfit for use ; as they are too short, rotten, or filled up with mud, stones, &c., from the affect of the flood and old age. The iron boxes in the said streets were brought over the flags and can be used as they are, but most of the wooden boxes will have to be dug and replaced when we want to use them.

The night inspection already mentioned in this report will have to be continued next summer as there are a good many blind leaks yet. This should be done very carefully as there is a considerable waste of water caused by these leaks on services, &c.

Many people let the water run to waste in their water-closets, taps, &c., day and night without any necessity, this night inspection will also be a good check on them.

REPAIRS TO FOUNTAINS, &c.

A new drinking tap was put on Dufferin Square with an inch pipe in the center of said square, so that if a large fountain is ever put in said pipe can be used for it. Four hose cocks were also put in different parts of this square. A new drinking trough and tap was put at corner of Wellington and Magdalen streets.

The drinking trough and tap corner of Seigneurs and Basin streets had to be moved to the west side of Seigneurs near the

corner of William street. The stone drinking trough and tap on Craig street at Victoria Square, was raised two feet and a new drain put in. The fountain at Court House Square was taken apart and the pipe burst in it was repaired. All the fountains, drinking taps and troughs should be painted as they were not painted since 1885.

The trough at Black's bridge Square will have to be raised about two feet. The fountains and basins in all the squares will require the usual repairs. A drinking trough and tap should be put in St. Lawrence street, at or near the corner of Mount Royal Avenue, or at the square in St. Jean Baptiste Ward.

There should be also one at or near the corner of Mount Royal Avenue and St. Denis street. One at the corner of St. Patrick and Napoléon Road. One drinking tap might be put on Center street, between St. Charles street and Father Salmon's Church.

Respectfully submitted,

Your obedient servant,

CHAS. LAGACÉ, *Foreman.*

McTAVISH STREET RESERVOIR.

FEBRUARY 10TH 1888.

TO LOUIS LESAGE, ESQ.,
Superintendent M. W. W.

DEAR SIR,

I respectfully beg to submit my annual report on performance of work, conditions and requirements at McTavish and High Level Reservoirs.

THE ENGINE AND BOILER.

Are in good working order, allowing reasonable wear. The engine will require a light repair, the boiler wants a new tube. When the boiler is removed into the new building it will want new fittings, viz : feed pipes, blow off pipes, globe valves, and gauge cocks (the present ones are worn out and leaking.)

A new Ash croft or rolling bar furnace.

THE BOILER HOUSE

or intended new engine house will require some repairs ; the roof is leaking and will require a new covering of felt and tar ; the front brick wall requires repairing as the wet has got through, and perished the brick. The wood work to be painted and the present engine room to be varnished.

THE DWELLING HOUSE.

A new set of heating pipes will be required as the present ones are eaten through with rust and leaking. A ventilator in bath room which is almost indispensable, the cornices of all the buildings to be painted and some broken slates on the roof to be replaced. The double windows and window blinds to be painted.

THE McTAVISH RESERVOIR.

Has been kept full during the year. A light repair was done on front wall, but the entire front wall and old portion of centre

wall will require grouting and pointing with cement, they are leaking considerably, the centre wall will leak 4 inches in 24 hours.

VALVE HOUSE.

The valve house wants new flooring over the wells, the old ones are *decayed and very dangerous*, those boards have been in use over 30 years. The roof and ceiling, windows and doors want painting. There is a leakage from the well in the valve house into the dry tunnel or waste water passage. The platform in the bottom of the tunnel is decayed and wants renewing. The waste water passage from reservoir through McGill College grounds to University street wants trapping as there is a most disagreeable smell arising in the valve house from the sewers, it is dangerous to go into the tunnel with foul gas : this could be remedied at a small expense.

THE GROUNDS.

Were kept in good condition last summer, the grass kept cut and cleaned. We will require a new set of seats on bank grounds.

THE FENCING.

The wood fencing all around reservoir wants straightening and adjusting, also painting as it has not been painted for some years.

THE FLAGMAST

Will require a coat of paint.

THE HIGH LEVEL RESERVOIR.

Wants some repairs in grouting and cementing the joints. The valve house wants a rough floor, the old one is decayed. The waste water passage to Peel street sewer wants trapping, the foul air comes so strong that it prevents the ice from forming in front of waste water opening in the reservoir. There is a reflux valve in drain pipe but it is not air tight.

N. B. A small ice-house might be built at a very small expense to keep ice for the use of men working here.

The following will be required for the ensuing year :—

300 tons Welch coal.
50 lbs. Rubber packing for engine.
25 lbs. Soap stone packing for engine.
2 Boxes Castor Oil.
2 Brls Valvoline.
1 doz. Gauge glasses for boiler.
2 yds. Rubber cloth.
7 Cords Beech fire wood.
1 New closet for engine house.
1 Patent tube cleaner.
1 Screw wrench.
1 Pipe do
30 lbs. Asbestos card board.
400 lbs. Cotton waste.
400 Fire brick (Clarke's).
2 bags fire clay.
2 Brls. soft soap.
1 doz. Corn brooms.
50 lbs. White lead (for engine).
5 gals. Paint oil.
10 lbs. Brass wire for springs.
2 Coal scoops.
10 lbs Plumbago powder.
6 Bags salt (to kill grass on reservoir banks).
1 Brl. coal oil (for cleaning engine).
2 do boiler compound.
4 Quires Emery cloth " No. F."
1 doz. snow shovels.
10 lbs. red lead.
50 Stove pipes and 12 elbows.
5 gals. turpentine.
1 Small boat for reservoir.
2 Screens for skimming reservoir.
1 Set grate bars.
2 doz. Rubber washers for mudport on boiler.
2 doz. Rubber washers for glasses on gauge.
2 doz. Rubber washers for oil cup.

1 gal. Seal oil for lamps.
2 Tube cleaners (hand).
6 Balls Asbestos.
6 " Cotton wick.
6 Scrubbing brushes.
15 Tons stove coal for Valve and Dwelling Houses.

The whole respectfully submitted.

I have the honor to be Sir,

Your obedient servant,

JAMES COLEMAN.

ENGINE HOUSE, McTAVISH STREET.

MONTREAL, FEBRUARY 10TH 1888.

LOUIS LESAGE, ESQ.,
Superintendent M. W. W.

SIR,

Herewith please find statement showing increased quantity of water pumped during months of October, November and December 1887 with Welsh coal; compared with corresponding months in 1886 with Chestnut coal :—

1887—15,941,534 gals. pumped with 129,869 lbs. Welsh.
1886—13,461,276 " " " 129,857 " Chestnut.

	129,869	15,941,534.00	
Welsh		12,275 gals.	12,275
Chestnut	129,857	13,461,276.00	
		10,365 gals.	10,365
			1,910 gals.

Showing an increase of 1,910 gallons per 100 lbs. in favor of Welsh coal.

Your humble servant,

JAMES COLEMAN.

N. B. It would be advisable to have our next supply of Coal passed through a 1 inch screen instead of ½ inch as done last year.

J. C.

ROCK GATES, MONTREAL AQUEDUCT.

JANUARY 19TH 1888.

LOUIS LESAGE, ESQ.,

Superintendent M. W. W.

DEAR SIR,

The repairs done on the Aqueduct during the past year were as follows. Ordinary repairs to fences and approaches to bridges and the planking of the following bridges : Entrance and Louson's bridge. Brault's bridge was remade with new beams, braces and planking, also the usual cutting of weeds.

The necessary repairs for the ensuing year will be the jacking up and planking of Crawford's, Greenshields, Rock and Knox's Bridges. The banks on Inland Cut have several slides in them near Junction and above Regulating Gates that need filling up as there was nothing done to them last year, also the ditches on the new Cut through Dumberry's on Fraser's Farm on the North side and Robert's and Dunn's on the South-East side of Cut need cleaning, also the Berm ditches, and ditches along the old line of Aqueduct will require cleaning in many places, namely, along Guy's, Crawford's, Greenshield's, Hadly's, Cross's, Mann's, Louson's and Brault's farms. Also the usual repairs to fences and approaches to bridges. The old cap fences along Duncan McDonald, Robert's and John Montieth's farms, need to be made into picket fences. Also the usual cutting of weeds.

The whole respectfully submitted.

I have the honor to be Dear Sir,

Your obedient servant,

EDWARD SALLEY,

Guardian of Aqueduct.

No. 1—Schedule showing the duty of Turbine No. 1.

MONTHS.	Time of pumping.	Revolutions.	Gallons pumped.	Castor Oil.	Tallow	Coal Oil.	Seal Oil.	Cotton Waste.	Coal for heating.
	Hrs. M.			IN POUNDS.					
1887									
January	744. 0	576,372	134,294,676	121.50	45 00	192.00	30.00	27.00	103160
February	668.30	523,052	121,871,116	105.75	.....	163.00	.....	27 75	77240
March	744. 0	576,357	134,291,181	139 50	44 00	121.00	80.00	29.00	81150
April	720. 0	490,417	114,267,161	126.00	.....	113.00	.....	.....	61960
May	738.35	604,857	140,931,681	139.50	12.00	124.00	30 00	26.37	.....
June	713. 0	574,825	133,934,225	137.25	45 00	122.00	.....	22.37	.....
July	744. 0	588,594	137,142,402	243.00	30.00	120.00	.....	21 87	.....
August	744. 0	532,828	124,148,924	272.25	40.00	151.00	.....	26.00	.....
September	687.10	464,263	108,173,279	173.25	35 00	147.00	.....	22 75	.....
October	744. 0	490,359	114,253,647	139.50	.....	156.00	.....	26 75	24850
November	716. 0	470,397	109,602,501	135.00	24 00	192.00	.....	26.63	53680
December	711.20	527,742	122,963,886	130.50	.....	168.00	.....	27.63	67540
Total	8674.35	6,420,063	1,495,874,679	1863 00	275.00	1769.00	140.00	279.12	469580
Last year	8209. 5	6,284,515	1,464,290,995	1487.50	400 00	1974.00	40.00	309.68	534360

Wheel and of Turbines Nos. 2 and 3.

[illegible]rbine [illegible]o. 3.	Gallons pumped.	Castor Oil.	Coal Oil.	Cotton Waste.
		IN POUNDS.		
[illegible]4,549	128,642,718	105.75	192.00	35.31
[illegible]7,479	102,427,466	94.50	163 00	29.50
[illegible]7,943	41,673,790	47.25	121.00	26.00
[illegible]0,094	100,966,920	94.50	113.00	25.25
[illegible]1,179	251,508,674	220.50	124.00	29.50
[illegible]0,490	246,084,060	270.00	122.00	31.81
[illegible]4,298	2[illegible]6,167,032	263.25	120 00	31.00
[illegible]0,138	241,886,665	276 75	151.00	30.63
[illegible]2,714	217,201,652	270.00	149.00	31.75
[illegible]2,680	207,258,624	252.00	156.00	33.00
[illegible]0,502	160,262,152	179.00	192.00	27.43
[illegible]4,184	115,380,356	123.75	168.00	33.81
[illegible]6,250	2 069,460,109	2197.25	1771.00	364.99
[illegible]7,002	2,409,355,720	2198.25	1975.00	380.05

Engine No. 1.

MONTHS.	Pumping time.	Revo- lutions	Gallo[illegible] pumpe[illegible]
	H. M.		
1887			
January.....	27. 0	15,571	8,564
February ...	55.55	32,074	17,640
March.........	485.10	356,273	195,950
April	237.55	176,575	97,116
May............	....	....	....
June	2.50	879	483
July...........	....	....	....
August	....	....	....
September ..	....	....	....
October	88.45	61,246	33,685
November...	328.10	217,518	119,634
December ..	5.30	3,084	1,696
Total......	1231.15	863,220	474,771

No. 1—Schedule showing the duty of Turbine No. 1.

MONTHS.	Time of pumping.	Revolutions.	Gallons pumped.	Castor Oil.	Tallow	Coal Oil.	Seal Oil.	Cotton Waste.	Coal for heating.
	Hrs. M.			IN POUNDS.					
1887									
January	744. 0	576,372	134,294,676	121.50	45 00	192.00	30.00	27.00	103160
February	668.30	523,052	121,871,116	105.75	.....	163.00	.....	27 75	77240
March	744. 0	576,357	134,291,181	139 50	44 00	121.00	80.00	29.00	81150
April	720. 0	490,417	114,267,161	126.00	.....	113.00	.....	.....	61960
May	738.35	604,857	140,931,681	139.50	12.00	124.00	30 00	26.37	.....
June	713. 0	574,825	133,934,225	137.25	45 00	122.00	.....	22.37	.....
July	744. 0	588,594	137,142,402	243.00	30.00	120.00	.....	21 87	.....
August	744. 0	532,828	124,148,924	272.25	40.00	151.00	.....	26.00	.....
September	687.10	464,263	108,173,279	173.25	35 00	147.00	.....	22 75	.....
October	744. 0	490,359	114,253,647	139.50	.....	156.00	.....	26 75	24850
November	716. 0	470,397	109,602,501	135.00	24 00	192.00	.....	26.63	53680
December	711.20	527,742	122,963,886	130.50	.....	168.00	.....	27.63	67540
Total	8674.35	6,420,063	1,495,874,679	1863 00	275.00	1769.00	140.00	279.12	469580
Last year	8209. 5	6,284,515	1,464,290,995	1487.50	400 00	1974.00	40.00	309.68	534360

Wheel and of Turbines Nos. 2 and 3.

...rbine ...o. 3.	Gallons pumped.	Castor Oil.	Coal Oil.	Cotton Waste.
		IN POUNDS.		
...4,549	128,642,718	105.75	192.00	35.31
...7,479	102,427,466	94.50	163 00	29.50
...7,943	41,673,790	47.25	121.00	26.00
...0,094	100,966,920	94.50	113.00	25.25
...1,179	251,508,674	220.50	124.00	29.50
...0,490	246,084,060	270.00	122.00	31.81
...4,298	2"6,167,032	263.25	120 00	31.00
...0,138	241,886,665	276 75	151.00	30.63
...2,714	217,201,652	270.00	149.00	31.75
...2,680	207,258,624	252.00	156.00	33.00
...0,502	160,262,152	179.00	192.00	27.43
...4,184	115,380,356	123.75	168.00	33.81
...6,250	2 069,460,109	2197.25	1771.00	364.99
...7,002	2,409,355,720	2198.25	1975.00	380.05

MONTHS.	Pumping time. H. M.	Re... luti...	
1887			
January.....	27. 0	15,571	8,564
February ...	55.55	32,074	17,640
March.........	485.10	356,273	195,950
April	237.55	176,575	97,116
May............	....	....	....
June	2.50	879	483
July............	....	....	....
August........	....	....	....
September ..	....	....	....
October	88.45	61,246	33,685
November...	328.10	217,518	119,634
December ..	5.30	3,084	1,696
Total......	1231.15	863,220	474,771

No. 3—SCHEDULE showing the duty of Steam Engines Nos. 1 and 3.

	Engine No. 3.			Total Gallons pumped.	Coal used—pounds.			Average pressure on pump pistons.	Castor Oil.	Coal Oil.	Seal Oil.	Cylinder Oil.	Cotton Waste.
	Pumping time.	Revolutions.	Gallons pumped.		For pumping	For banking fires.	To raise 1,000,000 gallons.		IN POUNDS.				
	H. M.												
,050	351.45	225 693	98,402,148	106,966,198	507,410	50,010	5211	75	40.50	152	18.00	284.50	23.12
,700	316.31	210,422	91,743,992	109,384,692	514,250	42,460	5089	75	49 50	76	40.75	251.87	20.06
,150	26.10	17,900	7,804,400	203,754,550	702,150	38.100	3633	75	123.75	88	64.00	430.62	18.87
,250	189 35	130,336	56,826,496	153,942,746	675,650	20,860	4524	76	74.25	64	56.00	316.87	16.50
.....	51.30	33 977	14,813,972	14,813,972	79,510	10,720	6091	75	6 75	16	8.75	40.63	.....
,450	120.25	79,270	34,561,720	35 045,170	169,290	23,760	5509	75	20.25	24	32.00	97.49	9.00
.....	293.25	197,359	86,048,524	86,048,524	392,710	32,990	4947	75	31.50	32	36 37	203.12	15.37
.....	323.50	220,940	96,329 840	96,329,840	444,720	44,300	5077	75	31.50	32	32.00	240.75	15.00
.....	286.20	187,165	81,603,940	81,603 940	390,000	40,200	5272	75	29.25	48	64.00	186.87	17.00
,300	154.05	100,322	43,740,397	77,425,692	345,590	33,020	4890	76	36.00	48	40.00	186.87	23.00
,900	.....	.....	.....	119,634,900	465,630	34,490	4184	75	38.25	40	48.00	186.75	11.87
,200	444.35	259,311	113,059,596	114,755,796	615,190	33,680	5654	75	40.50	104	60.00	251.87	15.31
,000	2558.11	1,662,695	724,935,020	1,199,706,020	5,302,100	404,590	4757		522.00	724	499.87	2678 21	185.10

No. 4—SCHEDULE showing the duty of the High Level Service Engine.

MONTHS.	Pumping time.	Revolutions.	Gallons pumped.	Coal used—pounds.			Average pressure on pump pistons.	Castor Oil.	Valvoline.	Cotton waste.	Coal for heating.
				For pumping.	For banking fires.	To raise 1,000,000 gallons.		IN POUNDS.			
	H. M.										
1887											
January	269.30	364,169	4,370,028	44,112	8,108	11,950	100	0.75	9.00	3.00	543
February	248.30	309,854	3,718,248	37,110	7,111	11,893	100	1.75	19.00	7.00	.....
March	289.30	341,802	3,101,624	39,926	7,779	15,381	100	1.50	23.00	6.00	.....
April	265.30	351,234	4,214,808	38,713	6,814	10,802	100	1.50	20.00	6.00	.....
May	383.20	561,861	6,742,332	60,576	6,930	10,012	100	2.25	28.00	4.00	.....
June	345. 0	521,213	6,254,556	58,597	5,851	10,304	100	3.37	26.00	7.00	.....
July	376. 0	613,353	7,360,236	65,263	7,489	9,884	100	1.75	40.00	7.00	.....
August	359.45	539,872	6,478,464	59,610	8,200	10,467	100	1.25	28.00	4.00	.....
September	300. 0	431,632	5,179,584	44,264	6,636	9,827	100	1.25	29.00	2.00	.....
October	302. 0	439,302	5,271,624	39,266	10,182	9,380	100	2.25	38.00	8.00	.....
November	284.30	419,260	5,031,120	41,319	10,014	10,203	100	1.25	30.00	5.00	.....
December	312. 0	469,899	5,638,788	48,684	9,969	10,402	100	2.00	35.00	7.00	292
Total	3736. 5	5,363,451	63,361,412	577,440	95,083	10,614		20.87	325.00	66.00	835

No. 5— SCHEDULE showing the depth of water, the rain fall and the average temperature at 9 a.m. at McTavish Street Reservoir.

MONTHS.	Average monthly depth in feet.	Rain guages in inches.				Average temperature at 9 a.m.
		Rain.	Snow.	Snow reduced to rain.	Total rain.	
1887						
January	22.51	1.93	51.50	3.91	5.84	3.65
February	22.05	0 39	26.00	2.76	3.15	10.18
March	21.95	0.10	31.74	3.61	3.71	18.13
April	21.60	2.54			2.54	32.67
May	21.77	1.04			1.04	59.55
June	21.25	2.11			2.11	60 50
July	22.40	2.05			2.05	68.55
August	22.43	1.80			1.80	61.48
September	20.84	1.09			1.09	51.97
October	17 80	2.41	3.00	0.20	2.61	39.77
November	19.92	0 76	19.50	2.85	3 61	29.03
December	22.14	1.66	20.75	0.97	2.63	16.42
Total		17.88	152.49	14.30	32.18	37.66
Last year		20 78	96 30	9.59	30 37	37.36

No. 3—S.

No. 6.—Repairs to Mains, Hydrants and Valves during year 1887.

Description.	12"	10"	8"	6"	4"	Hydrant valves renewed.	Hydrants replaced by non-freezing hydrants.	Hydrants replaced.	Hydrant rods broken.
Main pipes broken.....	0	1	1	2	25				
Joints blown out.....	18	15	1	19	39				
Stop-valves renewed.....	1	0	0	1	4				
Valves spindles renewed ...	0	0	0	7	7				
						130	18	4	8

Repairs, &c, to Services.

Leaking over drains.	Couplings leakings.	Burst in wall.	Cocks renewed.	Wooden boxes replaced by iron ones.	Services choked.	Old kind cocks replaced by "pneumatic valve".
32	81	37	29	194	90	195

Service pipes reported frozen.

Frozen outside.	Frozen inside.	Frozen in wall.	False reports investicated.	Leak on services from various causes undefined.
11	133	192	9	324

New patent hydrants put in during year 1887 (new work)..... 33
New patent hydrants in position up to January 1888 266
Pneumatic valves put in during year 1887 (new work) 2363

Hydrants frozen during winter commencing Dec. 1886 ending April 1887.

December	January	February	March	Ap
154	494	651	511	

No. 7.—Comparative Table showing the average daily consumption for each month and for each year from 1878 to 1887 in the City of Montreal.

	1878	1879	1880	1881	1882	1883	1884	1885	1886	1887
January	8,483,438	8,711,520	8,675,067	9,548,641	8,269,612	10.575,363	9,824,502	10,970,751	12,751,651	11,932,374
February	8,748,908	8,825,552	8,892,987	9,126,557	8,669,932	10,745,981	9,882,105	11,674,832	12,570,484	11,917,259
March	8,823,335	9,082,027	9,430,162	9,009,366	9,028,616	10,531,461	9,881,460	11,224,575	12,195,561	12,249,017
April	8,679,603	9,198,983	9,098,494	9,147,791	9,024,754	10,356,518	10,630,659	11,542,215	12,806,662	12,305,894
May	8,253,495	9,279,565	9,132,068	9,058,872	8,915,219	9,626,842	10,640,086	11,856,877	12,554,388	13,137,236
June	9,773,318	9,487,630	10,238,392	9 674,104	9,386,071	10,566,558	10,885,668	11,882,888	12,982,829	13,835,448
July	10,337,277	10,025,080	10,574,083	0,423,208	10,305,116	11,299 205	11,895,114	12,716,836	13,595,315	15,463,159
August	9,910,444	10,312,223	11,097,648	10,548,459	10,811,241	11,374,208	11,827,670	12,777,687	13,548,242	14,915,013
September	9,112,664	9,753,752	10,720,280	10,981,133	10,787,854	11,038,378	11 656,141	11,750,260	13,543,309	13,565,962
October	9.663,996	9,034,211	10,131,764	10 285,658	10,015,914	11,101,760	11,018,723	12,434,970	12,498,404	12,868,967
November	9,116,044	8,270,213	9,230,560	9,093,571	9,796,205	10,091,780	10,343 280	12,495,335	11,181,895	12,983,318
December	8,191,048	8,169,285	9,046,544	8,350,180	9,727,230	9,331,761	10,301,871	12,283,395	11,477,885	11,390,324
Daily average for each year.	9,091,131	9,177,504	9,691,901	9,606,295	9,566,759	10,552,174	10,687,037	11,970,504	12,642,957	13,054,906
Increase over preceding year.	111,619	86,373	514,397	.....	.....	985,415	134,863	1,283,467	672,453	411,949
Decrease from preceding year.				85,606	39,536	.....	.....			

No. 8.—SCHEDULE showing the different kinds and sizes of Water Meters belonging to the City and to private parties.

KINDS.	Size in inches.	Property of the City				Private Property.				Grand Total.
		In the City.	Outside the City.	At the Workshop.	Total.	In the City.	Outside the City.	At the Workshop.	Total.	
Gem	10	1	.....	1	2	.....	.....	.....	.....	2
"	6	4	1	1	6	4	.....	.....	4	10
"	4	14	.....	6	20	1	.....	.....	1	21
"	3	47	.....	3	50	6	.....	1	7	57
"	2	29	.....	4	33	5	.....	4	9	42
"	1½	8	.....	4	12	4	.....	1	5	17
"	1	.....	.....	7	7	.....	.....	.....	.....	7
"	¾	2	.....	10	12	.....	.....	2	2	14
"	⅝	.....	.....	73	73	1	.....	3	4	77
Union	3	.....	.....	1	1	.....	.....	.....	.....	1
"	2	.....	.....	2	2	1	.....	.....	1	3
"	1	29	.....	2	31	1	.....	.....	1	32
"	⅝	124	.....	6	130	5	.....	.....	5	135
Rotary Union	4	.....	.....	2	2	.....	.....	.....	.....	2
"	3	.....	.....	1	1	.....	.....	1	1	2
"	2	.....	.....	2	2	.....	.....	.....	.....	2
"	1½	2	.....	3	5	.....	.....	.....	.....	5
"	1	.....	.....	3	3	.....	.....	.....	.....	3
"	¾	.....	.....	14	14	.....	.....	.....	.....	14
"	⅝	.....	.....	3	3	.....	.....	.....	.....	3
Crown	4	7	1	.....	8	.....	.....	.....	.....	8
"	3	4	.....	.....	4	1	.....	.....	1	5
"	2	9	2	.....	11	.....	.....	.....	.....	11
"	1½	11	.....	1	12	.....	.....	.....	.....	12
"	1	25	.....	1	26	.....	.....	.....	.....	26
"	¾	41	1	.....	42	1	.....	.....	1	43
"	⅝	42	1	12	55	2	1		3	58
"	½	.....	.....	2	2	.....	.....	.....	.....	2
Worthington	3	1	.....	1	2	.....	.....	.....	.....	2
"	2	10	1	1	12	5	.....	.....	5	17
"	1½	13	.....	1	14	1	.....	.....	1	15
"	1	47	.....	.....	47	.....	.....	.....	.....	47
"	⅝	64	.....	4	68	6	.....	3	9	77
Continental	⅝	.....	.....	6	6	.....	.....	.....	.....	6
Empire	1	1	.....	.....	1	.....	.....	.....	.....	1
"	½	.....	.....	.....	.....	1	.....	.....	1	1
Siemens	2	.....	.....	1	1	.....	.....	.....	.....	1
"	1	.....	.....	1	1	.....	.....	.....	.....	1
Undine	½	.....	.....	1	1	.....	.....	.....	.....	1
Maxime	1	.....	.....	.....	.....	.....	.....	1	1	1
Lewis	⅝	.....	.....	1	1	.....	.....	.....	.....	1
Equitable	1	.....	.....	.....	.....	1	.....	.....	1	1
"	⅝	.....	.....	1	1	.....	.....	.....	.....	1
Total		535	7	182	724	46	1	16	63	787

No. 9.— SCHEDULE showing the Pipes, Hydrants, Valves, Services, etc., laid in the City of Montreal, during the year 1887.

Names of streets.	Length in feet of Cast Iron Pipes.						Number of Valves.							Wrought Iron Pipes.		Hydrants.	Length of Lead Pipes in feet.	Houses supplied.	Brass cocks.	Brass air cocks.
	24"	12"	10"	6"	4"	Total.	24"	12"	10"	8"	6"	4"	Total	2"						
East Ward.																				
Notre Dame																	51	6		6
Champ-de-Mars														24			35	2	1	1
St-Louis																	128	5		5
														24			214	13	1	12
Centre Ward.																				
Craig					324	324											120	8		8
Fortification																	84	8		8
St Frs.-Xavier					27	27						1	1							
St-Gabriel					9	9														
St-Dizier																	16	1		1
					360	360						1	1				220	17		17
West Ward.																				
St-Paul																	33	1		1
McGill																	41	1		1
																	74	2		2

St. Ann's Ward.																			
Seigneurs																27		1	
Notre Dame													12				1	1	
William																33	1		1
Barré																78	4		4
Wellington				54	8	72				4		4				103	3	1	2
Ann																50	2		2
Brittania																102	5		5
Farm					71	171										227	8		8
Forfar																78	4		4
Magdelen																128	6		6
Mullins																123	7		7
Prince																67	5		5
Richmond																128	3		3
Muray																91	9		9
Riverside				359		359				1		1				59	3	1	2
Montmorenci																130	6		6
Center																51	1		1
McCord																42	1		1
Bourgeois																24	3		3
St. Martin										1		1			1				
Basin																20	1		1
Longueuil Lane																13	1		1
				413	189	602				6		6	12		1	1574	74	4	71
St. Antoine's Ward																			
Seigneurs																21	1		1
Quesnel																48	1		1
St. Catherine				333		333										281	15		15
Windsor																50	1		1
Chatham			819	18		837			1			1			2	268	13		13
Carried over			819	351		1170			1			1			2	668	31		31

SCHEDULE showing the pipes, etc.—*Continued.*

Name of streets.	Length in feet of Cast Iron Pipes.						Number of Valves.							Wrought Iron Pipes.		Hydrants.	Length of Lead Pipes in feet.	Houses supplied.	Brass Cocks	Brass Air Cocks.
	24"	12"	10"	6"	4"	Total.	24"	12"	10"	8"	6"	4"	Total.	2"						
St. Antoine Ward.																				
Brought forward...	.....	.....	819	351	.....	1170	.....	.....	1	.....	.....	.....	1	.....	.....	2	668	31	.....	31
Drummond	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	83	2	.....	2
Peel	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	227	4	.....	4
Mansfield	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	116	2	.....	2
St. James	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	314	24	.....	24
St. Mark	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	38	1	.....	1
Shuter	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	381	11	.....	11
St. George.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	21	1	.....	1
Stanley	.....	...	.....	342	.....	342	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	406	10	.....	10
McGill College Ave..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	50	1	.....	1
University	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	214	6	.....	6
Versailles	.....	.....	.....	90	.....	90	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	276	1	.....	11
Guy	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	23	1	.....	1
Workman	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	255	10	.....	10
Dorchester	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	625	19	.....	19
Durocher.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	28	1	.....	1
Notre Dame	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	82	5	.....	5
Donegana	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	27	1	.....	1
Closse	.....	.....	.....	378	.....	378	.....	.....	.....	.....	1	.....	1	.....	.....	.....	63	2	.....	2
Aqueduct	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	114	6	.....	6
St. Antoine	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	481	19	.....	19
Richmond	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	56	2	.....	2

St. Alexande.	..	.....	.....	.....	.....	.....	.....	.....	.....	..	.....	.....	.....	.....	.....	.....	39	1	....	1
Aylmer	..	.....	.....	.....	.....	.....	.....	.....	.....	..	.....	.....	.....	.....	.....	.....	10	4	.....	4
Craig	..	...	.....	.....	.....	.....	.....	.....	.....	..	.....	.....	.....	.....	.....	.....	82	6	.....	6
Fort	..	.....	.....	.....	.....	.....	.....	.....	.....	..	.....	.....	.....	.....	.....	.....	51	2	.. ..	2
Mackay	..	.....	.....	.....	.....	.....	.....	.....	.....	..	.....	.....	.....	.....	.....	.....	183	5	.....	5
McTavish	..	.....	.....	.....	.....	.....	.....	.....	.....	..	.....	.....	.....	.....	.....	.....	77	2	.....	2
St. David Lane	..	.....	.....	.....	.....	.....	.....	.....	.....	..	.....	.....	.....	.....	.....	.....	16	1	1	.....
St. Luke	..	.....	.....	606	.....	606	.....	.....	.....	..	1	.....	1	.....	.....	.....	304	15	.....	15
St. Matthew	..	.....	.....	.....	.....	.....	.....	.....	.....	..	.....	.....	.....	.....	.....	.....	119	2	.....	2
St. Monique	..	.....	.....	.....	.....	.....	.....	.....	.....	..	.....	.....	.....	.....	.....	.....	158	5	.....	5
Sussex Avenue	..	.....	.....	.....	.....	.....	.....	.....	.....	..	.....	.....	.....	.....	.....	.....	73	1	.....	1
Bannockburn	..	.....	.....	.....	99	99	.....	.....	.....	..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Burnside Place	..	.....	.....	.....	.....	.....	.....	.....	.....	..	.....	.....	.....	.....	.....	.....	42	1	1	.....
Carlton Road	..	.....	.....	.....	90	90	.....	.....	.....	..	.....	1	1	.....	.....	.....	.....	.....	.....	.....
Chaboillez Square	..	.....	.....	.....	207	207	.....	.....	.....	..	.....	1	1	.....	.....	.....	.....	.....	.....	.....
Chomedy	..	.....	.....	.....	.....	.....	.....	.....	.....	..	.....	.....	.....	.....	.....	.....	278	4	.....	4
Lagauchetière	..	.....	.....	.....	.....	.....	.....	.....	.....	..	.....	.....	.....	.....	.....	.....	29	1	.....	1
Metcalfe	..	.....	.....	.....	.....	.....	.....	.....	.....	..	.....	.....	.....	.....	.....	.....	159	3	.....	3
Oxenden Avenue	..	.....	.....	265	.....	265	.....	.....	.....	..	.....	.....	.....	.....	.....	.....	125	5	.....	5
Redpath	..	.....	.....	.....	.....	.....	.....	.....	.....	..	.....	.....	.....	.....	.....	.....	40	1	.....	1
Sherbrooke	..	.....	.....	.....	.....	.....	.....	.....	.....	..	.....	.....	.....	.....	.....	.....	240	7	.....	7
St. Geneviève	..	.....	.....	.....	.....	.....	.....	.....	.....	..	.....	.....	.....	.....	.....	.....	28	2	.....	2
Crescent	..	.....	.....	.....	.....	.....	.....	.....	.....	..	.....	.....	.....	.....	.....	.....	106	2	.....	2
Bishop Avenue	..	.....	.....	1943	.....	1943	.....	.....	.....	..	3	.....	3	.....	.....	.....	1202	35	.....	35
Ontario "	..	.....	.....	.....	.....	.....	.....	.....	.....	..	.....	.....	.....	.....	.....	.....	30	1	.....	1
Albert	..	.....	.....	.....	.....	.....	.....	.....	.....	..	.....	.....	.....	.....	.....	.....	26	1	.....	1
Torrance	..	.....	.....	356	.....	356	.....	.....	.....	..	.....	1	1	.....	.....	.....	567	24	.....	24
Monette	..	.....	.....	.....	200	200	.....	.....	.....	..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Baile	..	.....	.....	.....	.....	.....	.....	.....	.....	..	.....	.....	.....	.....	.....	.....	22	1	.....	1
Simpson	..	.....	.....	.....	.....	.....	.....	.....	.....	..	.....	.....	.....	.....	.....	.....	28	1	.....	1
St. Margaret	..	.....	.....	.....	.....	.....	.....	.....	.....	..	.....	.....	.....	.....	.....	.....	11	1	.....	1
Lamb's Lane	..	.....	.....	.....	.....	.....	.....	.....	.....	..	.....	.....	.....	.....	.....	.....	80	5	.....	5
Belmont	..	.....	.....	.....	180	180	.....	.....	.....	..	.....	.....	.....	.....	.....	.....	131	4	.....	4
Total	..	.....	819	4331	776	5926	.....	.....	1	...	5	3	9	.....	.....	2	8804	313	2	311

SCHEDULE showing the Pipes, etc.—*Continued.*

Name of streets.	Length in feet of Cast Iron Pipes.						Number of Valves.							Wrought Iron Pipes.		Hydrants.	Length of Lead Pipes in feet.	Houses supplied.	Brass Cocks.	Brass Air Cocks.
	24"	12"	10'	6"	4"	Total.	24"	12"	10"	8"	6"	4"	Total.	2"						
St. Lawrence Ward																				
St. Lawrence																	221	8		8
St. Chs. Borromée																	110	7		7
Bleury																	9	1		1
St. Urbain																	657	31		31
St. George																	31	1		1
Vitré																	366	1		1
Evans' Lane																	27	1		1
St. Catherine																	308	24		24
Lagauchetière																	213	16	1	15
Park Avenue				257		257											175	5		5
Craig																	72	2		2
Durocher																	416	8		8
Mance																	349	15		15
St. Philippe																	66	4		4
Ste. Famille																	211	4		4
Plateau																	22	2		2
Vallée																	27	1		1
Sherbrooke																	178	2		2
Mignonne																	121	8		8
Total				257		257											3579	141	1	140

St. J.-Bte. Ward.																			
Rivard				42		42									3	950	57		57
Rachel		576			18	594		1				1			1	514	28		28
Cadieux				2511	90	2601					3	3			5	2237	143		143
Drolet																316	16		16
St. Denis																507	10		10
St. Lawrence		1456			54	1510		3				3			3	2868	144		144
Sanguinet				153		153									2	490	30		30
Maple				756	36	792					1	1			2	991	55		55
St. Hypolite				261		261									2	798	51		51
Marie-Anne				324		324										156	9		9
Berri				838	36	874					1	1			2	466	28		28
St. Dominique																110	4		4
St. Jean-Baptiste																73	6		6
Total		2032		1885	234	7151		4			5	9			20	10456	581		581
St. Louis Ward.																			
Hypolite																133	7		7
nan																137	5		5
guinet																502	33		33
Dominique																276	17		17
Denis																270	6		6
Constant																124	6		6
bina																78	3		3
rolet																701	39		39
rance																161	10		10
																20	1		1
																110	7		7
																102	7		7
																115	8		8
r																2729	149		149

SCHEDULE showing the Pipes, etc.—*Continued.*

Name of streets.	Length in feet of Cast Iron Pipes.						Number of Valves.							Wrought Iron Pipes.		Hydrants.	Length of Leaf Pipes in feet.	Houses supplied.	Brass Cocks.	Brass Air Cocks.
	24"	12"	10"	6"	4"	Total.	24"	12"	10"	8"	6"	4"	Total.	2"						
St. Louis Ward.																				
Brought forward...	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2729	149	.....	149
Dubord	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	59	4	.....	4
Ernest	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	26	1	.....	1
Leduc Lane...	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	92	6	.....	6
Mignonne.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	27	2	.....	2
Ontario	.....	.....	.....	.....	.....	.....	.....	..	.....	.....	.....	.....	.....	.....	.....	.....	110	4	.....	4
Cadieux	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	61	2	.....	2
Vitré	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	22	1	.....	1
Dufaulx	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	54	4	.....	4
Fortier	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	38	2	.....	2
Laval Avenue.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	..	1275	36	.....	36
Total.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4493	211	.....	211
St. James Ward.																				
Montcalm	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	64	6	.....	6
Rivard	.....	.....	.....	500	.....	500	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	354	20	.....	20
Berri.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	658	28	.....	28
Jacques-Cartier	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	286	19	.....	19
Amherst	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	183	10	.....	10
Montana	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	69	4	.....	4

Beaudry																176	13		13
Ontario																27	2		2
St. André																137	8	1	7
Craig																22	1		1
Mignonne																72	3		3
St. Catherine																87	5		5
St. Hubert																533	17		17
Lagauchetière																68	2		2
Cherrier																277	8		8
Dorchester																102	3		3
Labelle																55	4		4
Maple																428	18		18
St. Louis																66	4		4
Wolfe																131	6		6
Grant																25	2		2
Rousseau																143	13		13
St. Denis																361	10		10
Bérard																46	1		1
St. André Lane																19	1		1
Wood Yard																81	1		1
Total				500		500										4170	209	1	208
St. Mary's Ward.																			
Maisonneuve																37	2		2
Champlain																381	14		14
Fullum																162	10		10
Shaw				312		312										1120	65		65
St. Catherine					234	234										351	17		17
Ontario	1600			63	18	1681	1				4	3	8			3	236	12		12
Gain				900		900					1		1				322	20		20
Erié																	57	4		4
Carried over	1600			1275	252	3127	1				5	3	9			3	2675	144		144

SCHEDULE showing the Pipes, etc.—*Continued.*

Name of streets.	Length in feet of Cast Iron Pipes.						Number of Valves.							Wrought Iron Pipes.		Hydrants.	Length of Lead Pipes in feet.	Houses supplied	Brass Cocks.	Brass Air Cocks.
	24"	12"	10"	6"	4"	Total.	24"	12"	10"	8"	6"	4"	Total.	2"						
St. Mary's Ward.																		144	.....	144
Brought forward...	1600	.....	.....	1275	252	3127	1	.....	.....	.....	5	3	9	.....	.....	3	2675			
Panet	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	443	33	.....	33
Plessis	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	122	6	.....	6
Papineau Road	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	456	16	1	15
Mignonne	.....	.....	.....	324	.....	324	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	454	30	.....	30
Suzanne	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	68	9	.....	9
Dorchester	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	45	4	.....	4
Lafontaine	.....	.....	.....	230	.....	230	.....	.....	.....	.....	1	.....	1	.....	.....	.....	346	18	.....	18
DeLorimier	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	53	2	.....	2
Craig	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	129	8	.....	8
Dufresne	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	356	26	.....	26
Iberville	.....	.....	.....	270	.....	270	.....	.....	.....	.....	1	.....	1	.....	.....	.....	440	21	.....	21
Poupart	.....	.....	.....	520	.....	520	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	608	25	.....	25
St. Pierre Lane.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	45	5	.....	5
Visitation	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	50	4	.....	4
Fullum Lane	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	38	3	.....	3
Logan	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	107	6	.....	6
Notre Dame	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	48	2	1	1
Roch Lane	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	76	1	.....	1
Dansereau.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	64	6	.....	6
Jean Lane.....	.....	.....	.....	.....	72	72	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	76	6	.....	6
Josaphat Lane	.....	.....	.....	.....	162	162	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	57	4	.....	4
Total.....	1600	.....	.....	2619	486	4705	1	.....	.....	.....	7	3	11	.....	.....	3	6747	379	2	377

Hochelaga Ward.																				
Iberville																274	16		16
St. Catherine																279	14		14
Moreau																153	9		9
Logan				580		580				1		1				328	13		13
Harbour		2400		539	28	2967		2		1	2	5			6	212	11		11
Mignonne																307	16		16
St. Michel																35	4		4
Préfoniaine																66	4		4
St. Germain Lane																273	14		14
Frontenac				105		105					1	1				507	27		27
Dézéry																575	34		34
Notre Dame										1		1				73	5		4
Ontario	3700			347	35	4082				12	2	14			5	106	7		7
Total	3700	2400		1571	63	7734		2		15	5	22			11	3188	174		173
St. Gabriel Ward.																			
Ropery																58	4		4
Favard				27		27					1	1							
Richardson					9	9													
Bourgeois				144		144										114	3		3
Grand Trunk					9	9					1	1							
Rushbrooke																49	1		1
Charron																94	3		3
Wellington			67			67			1			1				170	8		8
Napoléon Road																46	3		3
Knox																43	1		1
Center				108	9	117					1	1				315	14		14
Manufacturers																307	18		18
St. Patrick				711	24	735									2	291	16		16
Edimburg																71	4		4
Albert																139	6		6
Total			67	990	51	1108			1		3	4			2	1697	81		81

RECAPITULATION.

Wards.	Length in feet of Cast Iron Pipes.							Number of Valves.							Wrought Iron Pipes		Hydrants.	Length of Lead Pipes in feet.	Houses supplied.	Brass Cocks.	Brass Pneumatic Cocks.
	24"	12"	10"	8"	6"	4"	Total	24"	12"	10"	8"	6"	4"	Total.	2"						
East	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	24	.....	.....	214	13	1	12
Center	.....	.....	.....	.....	.....	360	360	.....	.....	.....	.....	.....	1	1	.....	.....	.....	220	17	.....	17
West	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	74	2	.....	2
St. Ann	.....	.....	.....	.....	413	189	602	.....	.....	.....	.....	6	.....	6	12	.....	1	1574	74	4	71
St. Antoine	.....	.....	819	.....	4331	776	5926	.....	.....	1	.....	5	3	9	.....	.....	2	8804	313	2	311
St. Lawrence	.....	.....	.....	.....	257	.....	257	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3579	141	1	140
St. Jean-Bte.	.....	2032	.....	.....	4885	234	7151	.....	4	.....	.....	5	.....	9	.....	.....	20	10456	581	.....	581
St. Louis	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1877	211	.....	211
St. James	.....	.....	.....	.....	500	.....	500	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	4470	209	1	208
St. Mary	1600	.....	.....	.....	2619	486	4705	1	.....	.....	.....	7	3	11	.....	.....	3	6747	379	2	377
Hochelaga	3700	2400	.....	.....	1571	63	7734	.....	2	.....	.....	15	5	22	.....	.....	11	3188	174	.....	173
St. Gabriel	.....	.....	.....	67	990	51	1108	.....	.....	.....	1	.....	3	4	.....	.....	2	1697	81	.....	81
Total	5300	4432	819	67	15566	2159	28343	1	6	1	1	38	15	62	36	.....	40	42900	2195	11	2184

The total length of Cast Iron Pipes laid in the City during the year 1887 was 28343 feet, viz : 5300 feet of 24", 4432 feet of 12", 819 of 10", 67 of 8", 15566 of 6", 2159 of 4".—One Valve of 24", 6 of 12", 1 of 10", 1 of 8", 38 of 6" and 15 of 4", say 62 Valves, and 40 Hydrants.—2195 houses were supplied with water.

819 feet of 4" main were taken up in Chatham street, St. Antoine Ward and replaced by 10" main.
207 " Lead pipe " " Chaboillez Square, " " " " " 4" "
200 " " " " Monette Lane " " " " " 4" "

There were also laid for private Corporations in the City : 6 Hydrants, 14 Valves of 6", 15 of 4"— 42 ft of 12" main, 588 ft. of 6" and 1229 ft. of 4".

No. 10.—SCHEDULE showing the Pipes, Hydrants and Valves laid down and the number of houses supplied with water in the City of Montreal up to 1st January 1888.

WARDS.	MAIN PIPES.												VALVES.										Hydrants.		Services.
	30''	24"	16"	12''	10''	8''	6''	4"	3"	1½	Total	Lead Pipes	30"	24''	16"	12''	10''	8''	6''	4''	3"	2½	Total	Public.	Private.	
East	.....	.....	.....	1400	5483	290	2323	7549	713	80	17838	.....	.....	.....	.....	1	5	1	13	30	2	.....	52	38	1	779
Center	.....	1255	.....	1352	3281	22	3706	6986	161	35	16798	165	.....	2	.....	2	5	4	11	30	7	.....	61	26	4	604
West	.....	1490	654	2006	5024	678	5537	8209	585	.....	24183	.....	.....	.....	1	4	14	4	11	32	18	.....	84	41	.....	811
St. Ann	.....	.....	.....	6786	19692	615	25900	54892	53	.....	107938	1231	.....	.....	.....	12	24	1	46	100	3	1	187	157	16	3685
St. Antoine	1340	2272	1940	27760	11811	345	38414	106759	523	442	191606	2068	1	4	1	32	15	5	62	186	5	.....	311	248	7	6588
St. Lawrence	2135	2640	.....	2626	4241	3273	18756	25259	.....	.....	58930	694	.....	1	.....	1	4	11	35	45	1	.....	98	87	.....	3019
St. Jean-Baptiste	.....	.....	.....	3870	360	.....	5791	297	.....	.....	10318	.....	.....	.....	.....	6	.....	.....	6	1	.....	.....	13	27	.....	778
St. Louis	1645	.....	.....	93	11190	1630	19395	32410	.....	.....	66363	3062	1	.....	.....	2	9	1	27	52	.....	.....	92	88	.....	3741
St. James	2488	.....	.....	60	2390	.....	31678	43314	.....	.....	79930	620	1	.....	.....	2	2	1	37	69	.....	.....	112	107	2	5550
St. Mary	2585	6640	100	52	8338	.....	49242	40213	60	.....	107230	2679	1	3	1	3	11	.....	67	67	1	.....	154	114	8	5396
Hochelaga	.....	3700	.....	2400	6165	.....	12183	15677	.....	.....	40125	455	.....	.....	.....	2	3	.....	22	22	1	.....	50	46	.....	1141
St. Gabriel	.....	.....	.....	.....	.....	67	990	51	.....	.....	1108	.....	.....	.....	.....	.....	.....	1	.....	3	.....	.....	4	2	.....	81
Total	10193	17997	2694	48405	77975	6920	213915	341616	2095	557	722367	10974	4	10	3	67	92	29	337	637	38	1	1218	981	38	32173
Rising Mains	13360	26606	.....	1674	.....	.....	15	.....	.....	.....	41655	.....	9	22	1	2	.....	.....	2	.....	.....	.....	37	.....	.....	3
Exhib. Grounds	.....	.....	.....	.....	.....	.....	.....	5484	.....	.....	5484	.....	.....	.....	.....	.....	.....	.....	.....	3	.....	.....	3	4	.....	.....
G. T. R'y. Point St. Charles	.....	.....	.....	.....	.....	.....	7737	1861	.....	.....	9598	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	20	.....
Grand Total	23553	44603	2694	50079	77975	6920	221667	348961	2095	557	779104	10974	13	33	4	69	92	29	339	640	38	1	1258	985	58	32176

No. 11.—SCHEDULE showing the average pressure in the City Mains during the year 1887.

MONTHS.	At W. Works Shop Lagauchetière st., cor. of St. Charles Borromée.	Central Fire Station Craig street.	Fire Station No. 2, St. Gabriel street.	Fire Station No. 3, Wellington street.	Fire Station No. 4, Chaboillez Square.	Fire Station No. 5, St. Catherine street.	Fire Station No. 6, Ontario street.	Fire Station No. 7, Dalhousie Square.	Fire Station No. 8, Craig street.	Fire Station No. 9, Centre street.	Fire Station No. 10, St. Catherine street	Fire Station No. 11, Ontario street.	Fire Station No. 12, Seigneurs street.	Fire Station No. 13, Desery street.	Surface of water in McTavish Reservoir
Height above datum.....	42.00	32.00	57.00	27.00	.....	97.00	66.00	70.50	43.00	26.00	130 00	70.00	36.00	44.00	205.00
1887															
January.....	65.00	76 00	63.00	78.00	79.00	46 00	56.00	57.00	69.00	71 00	30.00	67.00	72.00	66.00	
February	65 00	73.00	63.00	79.00	79 00	46.00	58.00	57.00	69.00	71 00	30.00	67.00	72.00	66.00	
March	65 00	73.00	62.00	79.00	79 00	46 00	63.00	57.00	69.00	70.00	30.00	66.00	72.00	66.00	
April	65.00	74 00	63.00	77.00	80.00	46 00	65.00	57.00	69 00	70.00	30.00	67.00	67.00	65.00	
May	65.00	72.00	62.00	76.00	80.00	46.00	65.00	57.00	69.00	71 00	30.00	66.00	67.00	66.00	
June	65.00	72 00	62.00	76.00	80.00	45.00	65.00	57.00	69.00	69.00	30.00	66 00	67.00	66 00	
July	65.00	72.00	62.00	74 00	80.00	46.00	65 00	57.00	70 00	68 00	30.00	66.00	67.00	66 00	
August.....	65.00	72.00	61.00	73 00	80.00	45 00	65.00	57 00	71.00	68.00	30.00	66.00	67.00	66.00	
September	65 00	72.00	.....	73 00	80.00	45.00	65.00	57.00	71.00	67.00	30.00	66.00	67 00	66.00	
October	65.00	72.00	.....	75.00	80.00	45.00	65.00	56.00	70.00	69.00	30.00	66.00	67.00	66 00	
November	65.00	72.00	.....	76.00	80.00	45.00	65.00	56.00	71.00	69 00	30.00	66.00	67 00	66.00	
December.....	65.00	72.00	.....	76.00	80.00	45.00	65.00	57.00	70.00	69.00	30.00	66.00	67.00	71.00	
Average 1887...	65.00	73.00	62.00	76.00	80.00	46.00	63.00	57.00	70.00	69.00	30.00	66.00	68.00	66.00	
" 1886...	65.00	73.00	53.00	72.00	75.00	46.00	57.00	52.00	69.00	68.00	30.00	66.00	67.00	66.00	

No. 12 —SCHEDULE showing the position of Public Fountains erected in the City of Montreal, up to January 1888.

No.	LOCATION.	Cast Iron Basins.	Stone and Cement Basins.	Stone Fountains.	Cast Iron Fountains.	Wood Fountains.	Cast iron Cattle drinking troughs.	Number of jets.
1	Beaver Hall Square	.....	.....	.....	1	.....	.....	2
2	Bellerive Park	1	.....	.....	1	.....	.....	2
3	Bleury and Dorchester	.....	.....	1	.....	.....	.....	1
4	Bonsecours Market	.....	.....	.....	.....	2	.....	2
5	Chaboillez Square	.....	.....	.....	.....	.....	1	1
6	Colborne at flour sheds	.....	.....	.....	1	.....	1	2
7	Court House Square	2	1	2	.....	.....	.....	5
8	Craig at Victoria Square	.....	.....	1	.....	.....	3	1
9	Craig opposite Drill Hall	.....	.....	.....	1	.....	.....	1
10	Custom House Square	.....	.....	.....	1	.....	1	1
11	Dorchester and Dominion Square	.....	.....	.....	1	.....	1	1
12	Dorchester and Visitation	.....	.....	.....	.....	.....	.....	.....
13	Dufferin Square	.....	.....	.....	1	.....	.....	1
14	Grey Nun and Common	.....	.....	.....	.....	.....	1	1
15	Guilbault and St. Lawrence	.....	.....	.....	1	.....	1	1
16	Hay Market, College street	.....	.....	.....	.....	1	1	1
17	High Level Reservoir	.....	.....	.....	1	.....	.....	1
18	Jacques-Cartier Square and St. Paul	1	.....	.....	1	.....	1	5
19	McTavish street opposite Reservoir	.....	.....	.....	1	.....	.....	1
20	McGill and Common Ex. W. H	.....	.....	1	.....	.....	1	1
21	Mill at waste weir	.....	.....	.....	.....	1	1	2
22	Moreau near Notre Dame	.....	.....	.....	1	.....	.....	1
23	Mountain Park, foot of elevator	.....	.....	.....	1	.....	.....	1
24	Notre Dame and St. Suzanne	.....	.....	.....	1	.....	1	2
25	Ontario and St. Denis	.....	.....	.....	.....	1	1	2
26	Ontario and Champlain	.....	.....	.....	.....	1	1	2
27	Papineau Square	.....	.....	.....	.....	1	1	2
28	Phillips Square	.....	.....	.....	1	.....	.....	1
29	Phillips Square and St. Catherine	.....	.....	.....	.....	.....	1	1
30	Place d'Armes	2	1	.....	.....	.....	.....	5
31	Prince and Common	.....	.....	.....	1	.....	1	2
32	Richmond Square	.....	2	.....	1	.....	.....	3
33	Seigneurs and William	.....	.....	.....	1	.....	1	2
34	Sherbrooke near Drummond	.....	.....	.....	.....	1	1	1
35	Sherbrooke near Guy	.....	.....	.....	.....	1	1	1
36	Ss. Ann's Market	.....	.....	.....	.....	4	.....	2
37	St. Antoine Market	.....	.....	.....	1	.....	1	2
38	St. Catherine and Papineau	.....	.....	.....	.....	1	1	2
39	St. Gabriel Market	.....	.....	.....	.....	1	1	2
40	St. Louis Park	1	.....	.....	2	.....	.....	7
41	St. Patrick Square	1	.....	.....	1	.....	.....	2
42	St. Thomas and Ottawa	.....	.....	.....	1	.....	1	2
43	Victoria Square, south of Craig	.....	1	2	.....	.....	.....	7
44	do north do	3	.....	.....	.....	.....	.....	4
45	Viger Square, Basin No. 1	.....	1	.....	.....	.....	.....	1
46	Viger Square, Basin No. 2, 7	3	.....	.....	.....	.....	.....	9
47	Viger Square	.....	.....	1	1	.....	.....	2
48	Viger Market	.....	.....	.....	.....	2	6	6
49	Wellington and St. Patrick	.....	.....	.....	.....	1	1	2
50	Wellington and Center	1	.....	.....	.....	.....	.....	1
51	Wellington and Magdalen	.....	.....	.....	1	.....	1	1
	Total	15	6	8	25	12	34	111

SCH EDULE No. 12.—*Continued.*

LOCALITY. (Exhibition Grounds).	Wood Fountains.	Cattle water troughs.	Number of jets.
1 Distributed over grounds	.....	12	12
2 For ice water	2	.....	8
3 Opposite Agricultural buildings	1	.....	1
4 Distributed over grounds for fire purposes	.....	.....	4
Total	3	12	25

ALONG THE WHARFS. LOCALITY.	Iron Fountains.	Wood Fountains.	Cattle water troughs.	Urinals.	Number of jets.
1 Wind Mill Point	.....	1	1	1	3
2 Allan's wharf	1	.....	.....	1	2
3 Allan's sheds	.....	.....	1	.....	2
4 Opposite Custom House	.....	.....	.....	1	1
5 King's Basin	1	.....	.....	.....	1
6 Dominion Line	.....	.....	1	1	3
7 Foot of Jacques Cartier Square	1	.....	.....	.....	1
8 Beaver Line	.....	.....	1	1	3
9 Donaldson Line	.....	.....	.....	1	1
10 Longueuil Ferry	.....	.....	.....	1	1
11 Foot of Marlboro street	.....	.....	.....	1	-
Total	3	1	14	8	19

ADMINISTRATION.

No. 13.— Detailed Statement of Expenditures for the year 1887.

	$ cts.	$ cts.
Aqueduct.		
Repairing fences and gates	274 17	
do bridges and painting	687 35	
Entrance bridge planking	394 60	
Cleaning ditches and berm	214 58	
Cutting weeds	109 10	
Guardian's salary	600 00	
Sundries	12 00	
		2291 80
Wheel House.		
D. Kearney, chief engineer	1600 00	
Candlish, asst. do	700 00	
Vallée, do do	700 00	
Lafond and Lecourt, oilers	880 00	
Repairing machinery	315 48	
do building	60 71	
do dwellings	42 67	
Ground round buildings	121 10	
Sundries	35 37	
Supplies, oil, tallow, etc	1088 89	
		5544 22
Engine House.		
Repairing boilers	81 75	
do engines and pumps	365 12	
do building new Worthington	465 26	
do coal shed	133 73	
Wages	4459 33	
Rent for land	50 00	
Coal for steam	15936 17	
S, Veary, engineer	1000 00	
Sundries	21 35	
Supplies, oil, tallow, etc	465 95	
Putting out fire in coal	750 42	
		23729 08
Carried over		

Brought forward		.....
TAIL RACE.		
Repairing bridge on Lower Lachine Road.....	30 60	
Repairing fences.....	132 34	
Iron pipe under tail race..	54 02	
		216 96
RESERVOIRS.		
Guardian's salary.....	800 00	
McTavish—Repairs.....	306 15	
Shovelling snow.....	114 51	
Fuel and light	26 30	
Sundries	52 34	
		1299 30
PIPE TRACK.		
Repairing valve chambers.....	41 01	
Levelling Atwater Av. south of Lachine Canal	40 12	
Professional services.....	17 00	
		98 13
HYDRANTS.		
Inspecting—Wages	3769 54	
Repairing—Wages and material.	2593 52	
Thawing—Horses and laborers...	785 23	
Rent of tap-house in St. J-Bapt. Ward.....	127 27	
		7275 56
PUBLIC FOUNTAINS.		
Repairing—Wages	710 27	
do Materials.....	79 89	
		790 16
DISTRIBUTION PIPES.		
Repairing mains, services and valves—Wages.....	11722 24	
Thawing pipes and carting water.	1173 35	
Inspecting service pipes inside houses	2354 78	
Carried over.....		....

Brought forward.....	.....	.....
Dress for four inspectors	187 50	
Repairs to footpaths and service boxes—Wages.....	884 33	
Materials, iron, castings, lead, tin, &c.....	216 62	
Materials, wood, planks, nails, &c.	276 04	
do bricks, cement, sand, &c	183 02	
do rope, drain pipes, &c.....	13 64	
		17011 52
Work Shop on Lagauchetiere Street.		
Wages	6568 47	
Iron, spikes, nails, tin, lead, &c...	107 40	
Timber, wood, coal oil, &c	91 93	
Tools, pails, &c.....	135 64	
Rent of foreman's house.....	200 00	
Telephone and connections, &c...	220 00	
Fuel and light	283 78	
Sundries	118 19	
Repairing building	85 25	
		7810 16
Engine House, McTavish Reservoir.		
One stoker and one asst. engineer.	1092 00	
Fuel for engine.....	1241 05	
Oil, tallow, &c	64 73	
Repairing buildings.....	9 45	
do machinery	118 43	
		2525 66
Miscellaneous.		
Contingencies for Office	154 25	
Postage stamps. carters, &c.....	163 20	
Horse keep Superintendent	600 00	
Damages	335 77	
School taxes and assessments outside municipalities.....	1278 08	
Keefer's Report on Water Works.	241 12	
Carriage hire for inspectors and foreman	379 00	
		3151 42
Carried over.....		71744 47

Brought forward		71744 47	
STAFF.			
Superintendent	3500 00		
Asst. do	2000 00		
Draughtman	936 00		
1st Clerk	1000 00		
2nd do	600 00		
3rd do	800 00		
		8836 00	
WORK SHOP AT WHEEL HOUSE.			
Wages	80 08		
Materials, iron, copper, lead, &c..	40 49		
2 new lathes with connections ...	769 62		
		890 19	
METER DEPARTMENT.			
2 inspectors	1580 00		
Placing, testing and repairing meters	2317 62		
New meters	2870 34		
		6767 96	
SPECIAL.			
Replacing old service pipes by pneumatic ones, East side of St. Lawrence st., bet. Craig and Ontario sts.—Wages.....		674 33	
Keefer's Report on High Level Service for fires		750 00	
			89662 95

LOANS.

PIPE LAYING.

Wages	38576 32		
Tin, lead	1522 80		
Lead Pipes	8423 69		
Copper brass works	2620 02		
Timber	810 85		
Carried over	51953 68		89662 95

Brought forward.....	51953	68			89682 95
Bricks, sand	379	40			
Drain pipes.....	55	71			
Special castings.....	3527	34			
Cement	92	83			
Iron, steel.....	600	50			
Tools	204	55			
Packing.....	53	76			
Wr't iron pipes	313	39			
Cast iron pipes.....	29596	37			
Valve stones.....	378	75			
Sundries	556	42			
Rock excavation in St. Jean Bte. Ward.....	13285	04			
Money refunded in St. Jean Bte. Ward	889	73			
Asphalt and stone paving	139	12	102026	59	
New Worthington Engine.....			575	64	
New boilers for New Worthington Engine			923	50	
New pumping apparatus for High Level Sesvice.....			7358	13	
					110883 86
					200546 81

SCHEDULE No. 14.—Inventory of Stock on hand January 1888.

DESCRIPTION.	30"	24"	16"	12"	10"	8"	6"	4"	3"
New Cast Iron Pipes	1380	306	492	624	172	99	4428	5518	0
Cast Iron Pipes (old)	50	70	12	122	0	0	0	0	0
Stop-Valves	2	24	2	0	2	5	0	1	16
Slip Sockets	14	8	7	19	22	15	14	10	8
Cast Iron Caps	2	0	4	8	7	0	13	11	0
Cast Iron Plugs	1	4	0	0	10	0	6	0	11
Cast Iron Double Bends	0	0	0	0	0	0	0	0	0
Cast Iron Elbows	0	0	0	14	0	0	0	4	0

Size.	30x24	30x12	30x6	30x4	24x24	24x10	12x12	12x10	10x8	10x6
Crosses	1	5	2	1	5	1	10	3	4	2

Size.	10x4	8x8	8x6	8x4	6x4	4x4
Crosses	1	6	17	7	3	1

Size.	30x24	30x12	30x4	24x6	24x4	12x12	12x10	12x8	12x4	10x8	10x4	8x6
Tees	1	5	1	5	1	7	2	1	2	6	6	6

Size.	8x4	6x6	6x4	4x4
Tees	3	3	3	25

	BREECHES.						TAPERS.						
Size.	30x30	30x24	24x24	12x12	12x10	10x10	30x24	16x12	12x10	12x8	10x6	6x4	4x3
	4	2	4	2	2	4	8	2	3	4	5	8	7

INVENTORY—*Continued.*

New hydrants	1	Drinking troughs for cattle	2
Cast iron fender posts	70	Street watering nozzles (brass)	500
Hydrant covers assorted	107	" " " (iron)	88
Pieces for lengthening hyd.	35	Hydrant nozzles	40
Hydrants sleeves	2	Assorted spindles	75
Assorted valve covers	10	Rods for stop cocks assorted	80
Hydrants already used (ass.)	29		

2" Cocks for iron pipe	2	2" Iron pipes (in feet)	91
1½" " "	14	1½" " "	112
1" Pneumatic valves	1	1" " "	300
⅝" " "	2	1" Lead pipes (in lbs)	40,454
½" " "	5	⅝" " "	55,377
2 way cocks	13	½" " "	14,586
3 " "	7	196 Bars pig lead	24,892
4 " "	2	Block tin (lbs)	75
1" coupling cocks	61	3/16" Brass tubing	2000
3 way cocks	48	1½" Iron boxes	13
1½" nozzles	12	Valve stones (large)	4
1" "	4	Valve stones (small)	18
⅝" "	105		
½" "	115		
1" Unions	246		
⅝" "	285		
½" "	591		
⅝" Crosses	45		
1" and ⅝" T's	112		
Assorted covers for boxes	346		

No. 15.— Dwellings, Stores, Shops, Offices, Warehouses, Manufactories, Hotels, &c., in the City of Montreal, for year 1887-88, with the Assessed Water Rates thereon :

DWELLINGS.

Rate.	Assessed.	Tenanted.	Vacant.	Rate.	Assessed	Tenanted.	Vacant.	Rate.	Assessed.	Tenanted.	Vacant.
5.00	2524	2480	44	.....	3	.....	.....	.....	.....	.....	.....
5.75	4183	4133	50	22.25	318	316	2	41.75	12	12	.....
6.50	5505	5482	23	23.00	20	20	.....	43.25	1	1	.....
7.25	4832	4783	49	23.75	179	177	2	44.00	13	13	.....
8.00	2582	2566	16	24.50	2	2	.....	46.25	2	2	.....
8.75	2317	2300	17	25.25	393	393	.....	47.75	71	70	1
9.50	999	998	1	26.00	2	2	.....	51.50	33	33	.....
10.25	1806	1792	14	26.75	214	214	.....	53.75	1	1	.....
11.00	272	268	4	27.50	4	4	.....	55.25	67	67	.....
11.75	1550	1537	13	28.25	132	132	.....	59.00	10	10	.....
12.50	323	320	3	29.00	120	120	.....	62.75	71	71	.....
13.25	884	880	4	29.75	185	184	1	66.50	3	3	.....
14.00	418	415	3	30.50	10	10	.....	70.25	12	12	.....
14.75	697	697	.....	31.25	59	59	.....	77.75	21	21	.....
15.50	129	129	.....	32.00	1	1	.....	85.25	2	2	.....
16.25	517	512	5	32.75	279	277	2	92.75	15	15	.....
17.00	38	38	.....	34.25	27	26	1	100.25	1	1	.....
17.75	604	600	4	35.00	4	4	.....	107.75	7	7	.....
18.50	44	44	.....	35.75	20	19	1	115.25	1	1	.....
19.25	247	246	1	36.50	113	112	1	122.75	5	5	.....
20.00	48	47	1	37.25	4	4	.....	137.75	1	1	.....
20.75	326	325	1	38.75	10	10	.....	152.75	1	1	.....
21.50	131	130	1	40.25	154	152	2	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

Dwellings, &c.—*Continued.*

STORES, SHOPS, OFFICES, &c.

Rate.	Assessed.	Tenanted.	Vacant.	Rate.	Assessed.	Tenanted.	Vacant	Rate.	Assessed	Tenanted.	Vacant.
$ 4 00	1352	1240	112	.....	.....	.....	.....	.....	.....	.....	
5 00	732	669	63	$32 00	21	21	.....	102 00	7	7	
6 00	1224	1123	101	34 00	104	101	3	106 00	1	1	
7 00	378	358	20	36 00	12	12	.....	110 00	2	2	
8 00	482	435	47	38 00	42	40	2	114 00	3	3	
9 00	172	169	3	40 00	3	3	.....	122 00	11	11	
10 00	569	537	32	41 00	1	1	.....	130 00	1	1	
11 00	61	60	1	42 00	84	80	4	142 00	3	3	
12 00	297	282	15	46 00	19	19	.....	146 00	1	1	
13 00	49	49	.....	50 00	65	64	1	154 00	1	1	
14 00	325	298	27	54 00	15	15	.....	156 00	1	1	
15 00	36	36	.....	56 00	1	1	.....	162 00	8	8	
16 00	135	133	2	58 00	31	31	.....	170 00	1	1	
17 00	28	27	1	60 00	3	3	.....	182 00	2	2	
18 00	234	215	19	62 00	31	31	.....	194 00	1	1	
19 00	3	3	.....	64 00	1	1	.....	202 00	3	3	
20 00	99	96	3	66 00	24	23	1	210 00	1	1	
21 00	6	5	1	70 00	9	9	.....	242 00	3	3	
22 00	184	182	2	74 00	22	21	1	262 00	1	1	
24 00	40	39	1	78 00	2	2	.....	282 00	1	1	
25 00	1	1	.....	82 00	31	31	.....	290 00	2	2	
26 00	130	126	4	86 00	1	1	.....	322 00	4	4	
28 00	28	27	1	90 00	8	8	.....	342 00	1	1	
30 00	79	78	1	94 00	3	3	.....	482 00	1	1	
31 00	5	5	.....	98 00	13	13	.....	602 00	1	1	
.....	.....	.....	.....	.....	.....	.. ...	.....	642 00	2	2	
.....	.....	.....	.....	.....	.....	.....	...	.....	.....	.....	

RECAPITULATION.

	Tenanted.	Vacant.	Total.
Dwellings	33309	267	33576
Stores, shops, offices, &c	6790	468	7258
Hotels, taverns, &c	488	1	489
	40587	736	41323

Steam engines	109
Special charges for manufactories, &c	152
Horse stalls	1228
Water closets	8778
Urinals	675
Horses	5870
Cows	1129

CASH RECEIPTS.

For dwellings, shops, offices, hotels, &c		$414596.08
" Water closets		31373.00
" Urinals		619.00
" Horses		10566.00
" Cows		859.00
" Horse stalls		2143.00
" Steam Engines		4424.00
" Permits for Hose to water streets, &c		756 00
" " for building purposes		4032.37
" Private Fountains		427.00
" Manufactories, &c		2538.00
" Water supplied through meters	66213.63	
" Rent of meters	3417.11	
		69630.74
		542001 19
Miscellaneous		5810.43
Costs		47.50
		547862.12
Less refunded		2162.55
		$545699.57

CHAS LAPIERRE,
Accl. M. W. W.

CITY HALL,
Montreal, March, 1888.

Dwellings, &c —*Continued.*

HOTELS AND TAVERNS.

Rate.	Assessed.	Tenanted.	Vacant.	Rate.	Assessed.	Tenanted.	Vacant.	Rate.	Assessed.	Tenanted.	Vacant.
$12.00	108	108	.....	.....	.....	.....	.....	.....	.....	.....	.....
17.00	109	109	.....	$47.00	7	7	.....	$ 82.00	3	3	.....
22.00	102	102	.....	52.00	14	14	.....	92.00	1	1	.....
27.00	31	31	.....	57.00	5	5	.....	102.00	2	2	.....
32.00	55	54	1	62.00	5	5	.....	122.00	1	1	.....
37.00	20	20	.....	72.00	4	4	.....	.....	.....	.....	.....
42.00	20	20	.....	77.00	2	2	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

Horses.		Cows.		Stalls.		Urinals.		Water Closets.	
No.	Rate.	No.	Rate.	No.	Rate.	No.	Rate.	No.	Rate.
5870	$2.00	1129	$1.00	532	$1.00	586	$ 1.00	657	$ 2.00
				696	2.00	36	1.50	517	3.00
						37	3.00	7585	4.00
						16	15.00	19	15.00

SPECIAL RATES.

Bakeries.		Beer Bottlers.		Fountains.		Steam Engines.			Sundries.	
No.	Rate.	No.	Rate.	No.	Rate.	No.	Horse power.	Total	No.	Rate.
3	$ 3.00	1	$ 3.00	6	$ 3.00	1	½	½	6	$ 5.00
1	4.00	9	5.00	23	5 00	6	1	6	5	6.00
3	5.00	3	10.00	1	6.00	3	1½	4½	1	8 00
5	7.00	1	12.00	1	7.00	18	2	36	11	10.00
4	8.00	1	15.00	1	8.00	1	2½	2½	2	15.00
1	9.00			1	9.00	9	3	27	1	17.00
10	10.00			5	10.00	12	4	48	1	25.00
7	12 00			2	12.00	1	4½	4½	1	50.00
8	15.00			1	14.00	8	5	40	1	600.00
5	18 00			1	15.00	9	6	54	1	750.00
3	20.00			2	16.00	8	7	56		
1	23.00			2	19.00	6	8	48		
1	25.00			1	20.00	1	8½	8½		
1	27.00			1	26.00	2	9	18		
5	30.00			1	45.00	6	10	60		
						1	10½	10½		
						1	11	11		
						3	12	36		
						3	13	39		
						2	15	30		
						2	20	40		
						1	26			
						2	40			
						1	42			
						1	45			
						1	46			

ANNUAL REPORT

OF THE

SUPERINTENDENT

OF THE

Montreal Water Works,

FOR THE

YEAR ENDING 31st DECEMBER 1888

Printed by Order of the Water Committee.

Montreal :
EUSÈBE SENÉCAL & FILS, PRINTERS,
20, St. Vincent Street.

1889

ANNUAL REPORT

OF THE

SUPERINTENDENT

OF THE

Montreal Water Works.

Compliments of

B. D. McConnell,

Superintendent Montreal Water Works

Montreal :
EUSÈBE SENÉCAL & FILS, PRINTERS,
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1889

[redacted]

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ANNUAL REPORT

OF THE

SUPERINTENDENT of the MONTREAL WATER WORKS

FOR THE

YEAR ENDING 31st DECEMBER 1888.

To the

Mayor, Aldermen and Citizens of the City of Montreal.

GENTLEMEN,

I have the honor to report on the operations of the Water Department for the year 1888. The report is divided as follows, viz: 1st Aqueduct.—2nd Low Level pumping works.—3rd Work Shop at Wheel House.—4th Tail Race.—5th Pipe Track and Pumping mains.—6th Reservoirs.—7th High Level Service.—8th Pipe Laying.—9th Maintenance of Distribution and Service Pipes.—10th Consumption of Water.—11th Meters.—12th Administration.—13th General Remarks.—14th Appendix.

1st AQUEDUCT.

No work was done to the Aqueduct except cleaning ditches, cutting weeds, and altering and repairing some fencing. Much more work in the shape of ditching is necessary in order to keep surface water from running down the Aqueduct banks, scouring them and gradually sitting up the prism, necessitating at some future time costly work for the removal of obstructions thus formed. Some repairs to farm bridges, to fencing along the line of Aqueduct and at the old entrance, repairs to the Guardian's dwelling and painting of nearly all the bridges, should be done this year.

The dry retaining walls at certain points along section 1st. of New Aqueduct are out of repair but may remain as they are for some time without deteriorating.

The power furnished by the Aqueduct during the year averages less than for any other year since 1883. The winter level of water in the river at the Entrance, being also the lowest since that year.

2nd LOW LEVEL PUMPING WORKS.

The covering of the roofs of all buildings was pretty thoroughly overhauled, repaired and painted. The wall between the Wheel House and Machine shop was carried up 2 feet above the roof, the window built up in brick-work and the other two openings provided with iron doors, the whole completing a fire proof division between the buildings. This was done at the instance of the Fire Underwriters who threatened to increase the rate of insurance unless their suggestion was complied with.

A matter deserving of consideration is the lighting of these works by gas or electricity. Where there is so much of very dry wood-work in buildings of such great importance, coal oil lamps are extremely dangerous. The remarks on this subject of Mr. Kearney, the engineer in charge, (*vide* his report page 6) of appendix. I heartily endorse.

Beyond repairs to roofs as above mentioned very little was done to the buildings. Mr. Kearney's report gives all details as to last year's work, as well as the requirements for this year.

I consider it desirable to emphasize that part of his report relating to the Breast Wheel and its three pumps and the 3 pumps of No. 3 wheel. This machinery is the first that was used in our existing system of water works and consequently has been in operation for over 32 years. The name of the manufacturers, Wm. Fairbairn & Son, is a guarantee that the design and workmanship were the best of their day, and the work the machinery has done, justifies the assertion. But there is a limit to the durability of even the best machinery with the best of care, and this limit has about been reached by the Breast Wheel and six pumps under consideration. The wheel is shaky, the radial and diagonal arms requiring close attention. The pump, barrels and plungers are much worn and the rods require frequent packing. All possible attention is given to keep the whole in working order. If they last through the coming summer, a new wheel and sets of pumps should be substituted next winter, as at that season, on account of the diminished water power of the Aqueduct, the change can be most advantageously made.

The contract for a battery of 3 Heine safety boilers of 200 H. P. each was completed early in the summer. They were tested for evaporative efficiency on 26th and 27th September, but did not

come up to contract requirements. At the request of the contractor the Water Committee allowed a second test to be made, after which the experts conducting the test, having reported that the desired evaporation had been attained, the boilers were accepted. The reports on both tests will he found in the appendix. The total cost of these boilers has been $13002.91.

The new Worthington Engine (capacity 10 million Imperial gallons) which first commenced work in August 1886 was tested on 30th and 31st July last and was reported up to contract. The report on the test will be found in the appendix.

The total quantity of water pumped by water power during the year is 3,321,929,000 gallons, with an expenditure of $6287\frac{32}{100}$ as shown in schedule No. 13 under head "Wheel House", making $1.893 per million of gallons raised 169 feet or $0.0112 per foot high.

The total quantity pumped by steam power during the same time is 1,590,496,000 gallons, with an expenditure of $22068.28 or $13,.75 per million gallons raised 169 feet or $0.082 per foot high.

Shedules Nos. 1, 2 and 3 of appendix, show the work done by the pumping machinery at the low level pumping works.

The following table shows the cost of raising one million gallons 1 foot high by water power and by steam power for the last fourteen years and the average yearly costs, by each method, for that period.

YEAR.	BY WATER.	BY STEAM.
1875	$0.0200	$0.119
1876	0.0140	0.144
1877	0.0158	0.080
1878	0.0106	0.170
1879	0.0093	0.119
1880	0.0120	0.123
1881	0.0136	0.121
1882	0.0118	0.258
1883	0.0135	0.134
1884	0.0124	0.211
1885	0.0102	0.094
1886	0.0096	0.138
1887	0.0092	0.117
1888	0.0112	0.082
Average of 14 years	0.0124	0.136

3rd. WORK SHOP AT WHEEL HOUSE.

There was a large amount of work done at this shop and yet 4 and 6 inch valves had to be purchased outside besides sending out many more to be finished. Another lathe is wanted and would soon pay for itself.

The following is a list of new work turned out from this place :

3138— ½" pneumatic stop valves.
141— ⅝" do
28—1 " do
685— ½" 2 way branches.
218— ½" 3 do
180— ½" 4 do
6—2 " stop cocks for iron pipe.
6—1½" do
36855 pieces for air tube couplings.
77 hydrant watering nozzles.
11 new hydrant 4" seats.
105 new hydrant 6" seats.
1274— ⅝" nozzles.
430— ½" do
36—1 " do
22— ½" steel nozzles drills.
25— ⅝" do
46 new 4" valves.
59 do 6" do
6 do 8" do
14 do 10" do
41 do 12" do
2 meter flanges drilled.
2 feed pump pistons turned and fitted.
6—1 " meter couplings.
6— ¾" do
30— ⅝" do
12— ½" elbow meter couplings.
4 new pipe drilling machines fitted.
2 steel bolts and nuts turned and fitted.
3 meter pipe flanged and bored.
8 bolts and nuts 41½ lbs (L. of A. Bridges).
13 extra 6" hydrant bottoms.
2 new 4" valve spindles.
4 do 6" do
1 do 10" do
96 suction valve springs (H. L.E.)
1 doz. spare hydrant nuts.
6 leather washers for hydrants.

308 new meter pistons turned.
23 hykrant sockets (extra).
3 setts new brass tops for hydrants.
19—4 " valve castings } sent to John McDougall to
24—6 " do } be completed.
5—8 " do }

REPAIRS DONE IN MACHINE SHOPS.

7—1 " Union meters.
70— ⅝" do
2— ⅝" Worthington meters
23 hydrants.
1 iron spindle with new screw in collar.
1 flanging machine.
2—10" valve gates refaced.
1 american 4" valve.
1 key repaired (valve).
1—4" valve gate.
? 57 pick axes } St. Gabriel ward.
93 cold chisels }
21 fire irons.

Brass castings delivered from foundry during the year.....15,083¼ lbs.

4th. TAIL RACE.

Nothing more was done here than small repairs to fences and very slight patching to planking of the bridge at Lower Lachine Road. The wood work of this bridge ought to be renewed this year.

5th. PIPE TRACK AND PUMPING MAINS.

The expenditure under this head was small, having been merely the ordinary oiling of valves and repairs to valve chambers where any defect showed.

It had been proposed to complete the duplicating of the 30 inch pumping main, from the Wheel House to St. Antoine street. Pipe for the purpose was bought, but other work proved more pressing and this had to be deferred. It will be done this year and it is also proposed to run a 24 inch main in Centre street from the 30 inch at Atwater avenue to Napoleon Road, there to connect with the distributing mains of St. Gabriel ward and Point St Charles. This ought to relieve the pumps considerably and ensure to all of the city, south of the canal, a good volum water for fire purposes.

6th. RESERVOIRS.

The high level reservoir requires some of the joints in the masonry to be painted. Also the drain pipe, from the overflow and bottom sluice valve, should be trapped. There is on it now, a reflux valve as well as a ventilating pipe, but it is very doubtful if the former closes securely, certainly it is not air tight and in that respect is unfit for the purpose it was intended to serve, and the ventilating pipe does not carry off all the foul air. A siphon trap on the pipe, below the ventilator, will remedy the defect at small expense.

McTavish street reservoir will need unusually large expenditure this year. The principal items are, repairs to joints of front walls of reservoir, repairs to dry retaining wall on lower side of Carleton Road, back of McGill College, grading in front of new Engine House, boiler house, and coal shed, painting windows, fences, etc.

Measurements have been made in order to ascertain as nearly as possible the extent of the leakage in the front walls of McTavish street reservoir. It was found that with the reservoir full the leaks amounted to a little over 34,000 gallons in the 24 hours, and with the water drawn down 9 feet it was reduced to less than 4,000 in the same time. Apparently no damage is being done, but there is the waste of water with the probability that if not checked it will increase, so that all things considered it seems advisable to incur some considerable expenditure to repair the leaking joints.

7th. HIGH LEVEL SERVICE.

The contracts let in 1877 for a new pumping apparatus, consisting of boiler and engine, with the necessary alterations and additions to buildings, and new chimney stack were completed in '88. The engine which was, according to contract, to pump 2 million gallons in 24 hours, was tested on the 29th. and 30th. october last. As will be seen by the report of the experts, who made the test, the engine was in all respects up to contract. The report may be found in the appendix. The engine was at once accepted by the water committee.

Total cost for pumping plant, building and chimney stack $37,998.00.

Schedule No 4 of appendix shows the work of both engines. The old condensing Worthington worked up to the middle of August, when the new Gilbert engine commenced pumping and has done all the work ever since.

The total quantity of water pumped during the year was 81,989,000 gallons, number of working hours 3021, number of feet the water is raised 213, total cost (see schedule 13) $3,440.89 equal

to $41.97 per million gallons raised, or $0.19\frac{7}{10}$ per million raised 1 foot.

The cost of raising 1 million gallons 1 foot high, was :

In 1876	$0.240
" 1877	0.253
" 1878	0.355
" 1879	0.283
" 1880	0.274
" 1881	0.226
" 1882	0.256
" 1883	0.286
" 1884	0.318
" 1885	0.376
" 1886	0.250
" 1887	0.187
" 1888	0.197
Average of 13 years	0.269

As the above figures show that the cost was higher in '88 than in '87 and this apparently tells against the new engine, it seems right to explain that the extra cost was largely due to higher wages, repairs and purchase of oil, tallow, coal, etc., not all used. The economy of the new engine will be easily recognized on reference to schedule No. 4 and to the office record of the work of both engines, from which it appears that the old engine pumped $47\frac{1}{2}$ millions gallons in 2677 hours with a consumption of 495,305 lbs of coal, and that the new one pumped $34\frac{1}{2}$ million in 344 hours with 123,131 lbs. of coal, or in other words the new engine did 41 % of the year's work, in 12 % of the time with 20 % of the coal.

8th. PIPE LAYING.

The total length of cast iron water pipe laid in the city during the year 1888 is 67141 feet or a a little over $12\frac{1}{2}$ miles, the weight of metal being 2225 tons.

The length of each particular size of pipe laid were as follows, viz: 1194 feet of 20 inch, 33,757 feet of 12 inch, 1652 of 10 inch, 849 of 8 inch. 27,792 of 6 inch and 1897 of 4 inch.

The were taken up of old pipe, 400 feet of 8 inch pipe, 3294 feet of 6 inch, 575 feet of 4 inch and 2000 feet of useless 6 inch pipe were left in the ground, making a total of 6269 feet to deduct from the total length of mains in the city.

There were 182 valves laid, viz: 2 of 20 inches, 43 of 12 inches, 15 of 10 inch, 9 of 8 inch, 91 of 6 inch and 22 of 4 inch.

164 fire hydrants were put in and 2467 houses were supplied with service pipes.

This work added to what had been done up to the close of 1887 makes a total of 23,553 lineal feet of 30 inch pipe, 44,603 of 24 inch, 1,194 of 20 inch, 2,694 of 16 inch, 83,836 of 12 inch, 79,627 of 10 inch, 7,369 of 8 inch, 244,165 of 6 inch, 350,283 of 4 inch, 2,095 of 3 inch and 11,531 of smaller mains, mostly lead. Making a grand total of (the old pipe taken up, as before mentioned, being deducted) 844,681 feet or 161.16 miles of main pipes.

9th. MAINTENANCE OF DISTRIBUTION PIPES, SERVICE PIPES, HYDRANTS AND PUBLIC FOUNTAINS.

The work under this head was about the average. Schedule No. 6 gives in detail a statement of repairs done to mains, service pipes, valves, hydrants, etc., etc. There was an unusual number of hydrants found frozen, due in a great measure to the absence of snow, in the early part of the winter of '88 to '89.

The night inspection for leaks was kept up during the year and aided very materially in diminishing waste.

10th. CONSUMPTION OF WATER.

The total quantity of water pumped during the year is 4.912,-425,000 or a daily average of 13,422,000 gallons, being an increase of 367,000 over the daily average of 1887. Of the above quantity 67.62 % was pumped by water power and 32.38 % by steam power.

The purposes for which the water is used are classed as follows:

	GALLONS.
Metered and charged at meter rates (further subdivided under the head "meters")	486,028,000
Flooding rinks and slides etc., etc.	2,566,350
Fires	4,860,250
Watering streets	45,619,400
Public fountains	24 462.000
Fountains and latrines on wharves	12,178,000
Lubricating steps of turbines	7,353,000
Domestic purposes and engines paying by horse power, being that paid for at rates based on rental and special rates and including waste	4,329,358,000
Total	4,912,425,000

11th. GENERAL REMARKS ON THE DISTRIBUTION MAINS AND FIRE SERVICE.

The chief improvements effected in this branch of the service during the past year, were the laying of twelve inch main in Craig street throughout its entire length, to replace the old 8 inch main of the western part and the 6 inch of the eastern part of this street. The old hydrants were replaced by new ones, generally a two nozzle and a five nozzle hydrant alternately. St. Antoine street from Dominion street to Mountain was also laid with a 12 inch main and proper distribution of hydrants was made along its line. A 12 inch main was ordered to be laid the whole length of St. Catherine street and that part of it between Amherst and Panet streets was completed. St. Denis street from Sherbrooke street to Mt. Royal avenue was also laid with a 12 inch pipe, also Desery and Fullum streets, and Papineau Road from Sherbrooke street to Rachel.

The foregoing are some of the principal improvements carried out, but in St. Jean Bpte ward 6 inch mains were laid wherever the Road Department made sewers (except in Rachel street which is a 12 inch) and in other parts of the city 10 and 6 inch mains were laid.

These large mains, especially such as that of St. Catherine street, when completed, and of Craig street when supplemented by the completion of that of St. Antoine, will do much towards strengthening the supply for fire purposes in many localities where the mains are too small to carry the requisite volume of water for any considerable distance and deliver it from the hydrants, without undue loss of head.

A line of pipe exclusively for fire service was laid from in front of the Engine House at McTavish street to Sherbrooke street, along Sherbrooke to Peel, down Peel and Windsor to St. James and eastward on St. James as far as opposite the St. Joseph Asylum. That part of this main which is in McTavish street is 20 inches in in diameter and the rest 12 inches, the whole fed from the Peel street reservoir or directly from the pumps at McTavish reservoir. The hydrants along the route are 5 nozzle. The pressure near the Windsor Hotel is 132 lbs., and at St. James street 187 lbs. to the square inch. This fire service line is the first part of a scheme suggested by Mr. Keefer. It protects the valuable new Ry. stations of the Grand Trunk and Canadian Pacific Railways, the Windsor Hotel and several churches in the vicinity.

For the current year, some of the improvements in contemplation are tapping the rising mains at Centre street and at St. Antoine street. (This was mentioned under the heading 5 "Pumping mains.") William street 6 inch main which is in very bad condition is to be replaced by a 12 inch. St. Antoine str[illegible] hav

a 12 inch throughout (part of it was laid last year). St. Catherine street, ditto. A 10 inch is to be laid from St. Paul street, down St. Sulpice and along Commissioners and Common to St. Peter. At present the supply for fire purposes here is quite insufficient. The distribution in St. Jean Baptiste ward must also keep pace with the laying of sewers.

12th. METERS AND HOUSE INSPECTION.

The number of meters in use at the end of the year was 632 including those at Wheel House. This in an addition of 38 to the number in use in '87. The city owns 38 of those in use and the others 38 belong to private individuals or business firms.

There were 93 new places metered and 55 meters which had been in use were discontinued. There were 184 changes of meters made, some being out of order, and for various reasons. There were 14 meters damaged by frost and fire. Three of these were totally destroyed, two of them belonging to the city.

The Department purchased during the year 41 meters, viz: 17 Crowns, 5 Gems, 18 Empires and 1 Sporton, at a cost of $2,839.03 as shown on schedule 13 in appendix. The appropriation for new meters having become exhausted early in the year, persons requiring meters had to purchase for themselves.

There were 10 meters at the Harbour latrines and drinking fountains, where over 12 million gallons of water were used. An increase of 4 million over the consumption of '87. The city supplies this water to the Harbour without charge.

There were 5 meters at the Low Level Pumping works, 3 to measure the water used at steps of turbines and 2 for feed water. to boilers.

The water sold by meter last year and the previous year was as follows:

	Millions of gallons.	
	in 1887.	in 1888.
Railways (including City Passenger)	152.86	150.66
Factories and engines	97.76	97.54
Elevators (exclusive of those of Rys and hotels)	82.07	103.55
Breweries	23.62	23.52
Hotels	33 40	38.20
Schools, convents and colleges	15.97	15.88
Hospitals and homes	6 2.	9.53
Churches and organs	3.89	5.35
Miscellaneous, as photographers, livery stables, skating rinks, horse exchange, restaurants, dyers, Florists, etc	16.95	19.42
Outside municipalities	35.63	22 39
Totals	468.97	486.04

showing an increase of 3.64 % in '88 over '87. This is not such an increase as the two previous years showed. 1887 was 20 % over '86 and '86 25 % over '85. The diminution in the rate of increase may to some extent be attributed to the fact that the Department is restricted in the purchase of meters and that when people have to supply their own, the cost discourages them.

Comparison of Meter Rates with Rates based on Assessed Rental.

		Gallons.
The total quantity of water pumped in 1888 is.....		4,912,425.000
That bringing no direct revenue such as watering strs. fires, fountains, etc.....		97,039.000
The difference is that from which revenue is derived, viz.....		4,815,386,000
That charged for by meter is.....		486,028,000
Balance, being that charged for at rates based on rental and special rates and including waste.....		4,329,358,000
The revenue from water in 1888 was. ..	$591,873.00	
That from metered water including rent of meters was.....	73,498.00	
Balance being revenue from rates based on rental and sundry special charges...	518,375.00	
Total water from which revenue is derived.		4,815,386.000
Revenue from same	591,873.00	
being at the rate of 12¼ cents per 1000 gallons.		
Total water sold at rates based on rental.....		gall. 4,329,350,000
Total revenue from same.....	$518,375 00	
being at the rate of 12 cents per 1000 gallons.		
Total water sold at meter rates.....		gall. 486,028,000
Total revenue from same.....	$ 73,498 00	
being at the rate of 15$\frac{1}{10}$ cents per 1000 gallons.		

The number of prosecutions for violation of the by-law re to meters was 3.

The monthly inspection and reading of all meters in t been kept as usual.

HOUSE SERVICE INSPECTION.

This inspection has been kept up throughout the year, for which purpose the city is divided into five districts, each of which has one inspector. A good deal has been accomplished in the way of stopping waste, but much more remains to be done in that line and the strictest attention on the part of those entrusted with that duty is absolutely necessary to induce water tenants to kep their fixtures in proper repairs. Last year's inspection discovered and stopped waste from defective fittings as enumerated below:

Bib cocks out of repairs	2,677
Ball do do	1,325
Water pipes do	957
Closet cocks and valves out of repairs	399
Basin cocks out of repairs	176
Urinal cocks do	117
Water closet fixtures do	54
Stop cocks do	41
Bib cocks found open	114
Water closet handles tied up	40

The estimated average waste per hour from the above named sources was 13 gallons. Besides these the inspectors found 53 taps left open to prevent freezing, wasting an average of 36 gallons per hour each, 100 taps open to flush drains wasting about 50 gallons each, 169 cases of using water illegally, 1 using hydrant without permit. In all cases the waste was stopped very soon after discovering. There were 1029 notices issued 715 in English and 314 in French. The number of prosecutions was 155.

13th. ADMINISTRATION.

Schedule No. 12 in the appendix show the cost of administration for the year in detail. The total amount is $91,713.63.

Before closing this report it is my sad duty to record the lamented death of Mr. Louis Lesage, for 33 years superintendent of the Montreal Water Works. His demise occurred on the 9th January 1889, after a protracted illness.

I have the honor to be

Gentlemen,

Your obedient servant,

B. D. McCONNELL,

Supt. M. W. W.

APPENDIX

CONTENTS

PUMPING WORKS, JANUARY 17TH, 1889.

R. D. McCONNELL. ESQ.,

Assistant Superintendent Water Works.

DEAR SIR,

My report for the year ending the 31st December 1888 is herewith respectfully submitted.

No 1 WHEEL HOUSE

Only a portion of the repairs recommended in my last year's report was carried out, consisting of the renewing of a section of the gallery floor, some slight repairs to the sheet iron roof, and the painting of the same. The painting of the doors, windows and double windows, was not done. This should be attended to as soon as possible to prevent the wood work from rotting, and the north door and frame should be entirely renewed. This done and the building will be in good order.

Nos. 2, 3 & 4 WHEEL HOUSE

The repairs to this building also consist of the renewing of a portion of the flooring, the patching of the sheet iron roof, and painting of the same. The south end gable wall was raised above the roof and the large window between the machine shop and this building bricked up, the wooden doors and frames between the same were removed and replaced by iron ones, at the request of the underwriters.

The doors, windows and double windows, of this building should also be painted, and the head race platforms should be renewed.

WORK SHOP

The sheet iron roof of this building was entirely renewed, which was all the repairs found necessary. It is at present in good order.

One lathe six foot bed by twenty inch swing was added to the shop tools and was found very serviceable. In view of the large amount of work projected for pipe laying this year another lathe

six foot bed by thirty inch swing could be used with advantage and profit. The shafting mortice bevelled driving wheel should be duplicated and kept on hand ready to replace the present one when it gives out which may be looked for early in the year. A new set of pipe and machine dies are necessary.

BRASS FOUNDRY

The roof of this building was patched and painted. That portion of the chimney above the roof requires repairing. This shop could not meet all the requirement of the Department, a portion of the castings had to be given out. This is likely to occur again this year, as much will be required. I am of opinion that it is more profitable to do this, then to increase the plant.

THE DWELLINGS

The repairs recommended to these buildings in my last year's report were not carried out, the roof only being painted. The whole outside wood work generally, windows and double windows should be painted. The kitchens of two of the dwellings should have a wooden sheeting 3 feet 6" high, the plaster from the surbase up that height being in a tumble down condition.

These repairs should be attended to as early as possible in the spring.

Nos. 1 & 2 ENGINE HOUSE

This building is in very good order, all that is necessary is the renewing of a portion of the basement platform ; a section of the sheet iron roof was renewed and the whole painted.

THE BOILER HOUSE

That portion of the boiler house in which the Heney Boilers are placed, underwent considerable repairs, much patching was done to the ceiling. The removing of the old boilers, made necessary the closing up of many doors in the brick gable wall between the engine and boiler house, and the cutting away of a portion of the stone wall at the back of the new boilers in order to admit of a passage behind them.

An iron stairs with a platform landing and hand railing w found necessary in order to facilitate a convenient passage fr the engine room to the boiler room. A new cement floor of Baccerini type was laid by that gentleman, it presents a very e appearance but shows signs of rapid wearing. [illegible] turning table and coal dumping slides was pla

room which greatly and cheaply facilitate the handling of coal to these boilers. The outside demolished portion of the tramway covering pulled down to admit of the removing of the old boilers and the bringing in of the new was replaced in an improved and substantial manner. The walls and ceilings were white washed, the whole presents a very nice appearance. The brick floor in front of the other boilers is very much worn out and should be renewed which is all the repairs at present necessary. The roof was also painted.

No. 3 ENGINE HOUSE.

A cement floor of the same type before mentioned was laid in the basement of this building which is a great improvement on the old wooden one, removing entirely the heavy offensive smell that was so very disagreable. The roof was also painted. Present appearances are that this building will not require any repairs during the year.

THE COAL SHED.

The painting of this building recommended in my last year's report, was not carried out. It should be painted this year in order to preserve it from the weather.

THE GROUNDS.

The grounds received only the ordinary attention and are at present in good order. The waste weir covering, immediately in front of the work shop, should be renewed as early as possible in the spring, it required constant patching during the year to keep it in a passable condition.

No. 1 TURBINE WHEEL.

At the time of writing this wheel is in good order and working well. The large spun wheel on the counter shaft was furnished with a new sett of wooden cogs and one of the pump valves removed and replaced. Unless something unforseen occurs it will not require much repairs during the year.

No. 2 WHEEL.

This wheel worked well, the repairs being slight but general. So old and infirm is this wheel and its connections that considerable repairs may be looked for at any time.

No. 3 WHEEL.

The trouble experienced with this wheel during the year, which was considerable, was the frequent packing of the pumps made necessary by their much worn condition. Like No. 2 its parts are so old and worn that repairs are constantly looked for.

No. 4 WHEEL.

This wheel required only the ordinary keeping up the pumps, and connections are in fair condition with the exception of a slight perceptible leak by the pump pistons. The reflux valve will require some little attention it will be attended to the first favorable opportunity. The scroll or sluice of the water wheel in the wheel pit will require some slight repairs.

No 1 OR NEW WORTHINGTON ENGINE.

This engine is now doing all the pumping by steam and working well with the exception of an occasional heavy pounding of the pump valves and striking of the heads. This valve pounding is very disagreable and the striking of the heads may result in the breaking of a piston ring, in fact one has been broken, I believe, from this same cause while the engine was being run by the Worthington representatives, which they removed and replaced. It would be very annoying and expensive to have a repetition of this.

I would suggest that the Worthington Company be called upon to work the engine six consecutive days and nights without stopping and without alteration to slide valves, cut-off valves, motion or other parts and that the engine be required to work smoothly without noise or jar, should stoppage or alteration be found necessary to any part or parts, excepting the several globe valves controlling the engine, the run to be commenced over again and repeated until the six days run is obtained under the condition stipulated. The City giving the engine an independent main to work on in order that it may be relieved from the pulsations of the water discharged into the mains from the other pumps of the works.

No 3 ENGINE OR OLD WORTHINGTON ENGINE.

This engine worked well during the year and is at time of writing undergoing a temporary over-hauling in order that it may be in as good a condition as possible for the winter pumping season. This work would have been carried out earlier had I been allowed to use the new engine during the summer months. The work being at present in progress I cannot give full

ment of the parts repaired or replaced, all that will be done will be of a temporary nature believing that it is better to leave the thorough refitting of the high pressure pistons until next summer when the engine should also be painted and varnished.

No 1 BATTERY OR HEINEY BOILERS.

This battery of boilers commenced working for the first time on the 18th of June and give no trouble since. Two of them are found sufficient to furnish steam for the new engine working full speed leaving one boiler spare in readiness to be put into service should its service be suddenly required. The safety valves were furnished with steam up take galvanized iron pipe and the necessary flanges for connecting them to their places. The battery is at present in good order. The grate bars show signs of early wearing out.

The high steam carried on these boilers 110 lbs. being 30 lbs. greater than the City water pressure, makes feeding them by City pressure impracticable, should the feed pump become deranged the engine would have to be stopped, the steam pressure in the boilers lowered to 70 lbs. in order that the boilers could be fed from the city pressure and the engine remain stopped until the feed pump was repaired. In view of this situation I would recommend that another boiler feed pump be added to the service which would remove all possibility of the above mentioned trouble and leave the whole boiler feed arrangment in a good working condition.

No. 2 BATTERY OF BOILERS.

This battery worked very satisfactorily during the year and is not likely to incur any expense during the ensuing year.

No. 3 BATTERY.

This battery also worked very well. A portion of one of the brick flues tumbled in I had it temporarily repaired by covering the damaged part with a sheet iron plate. This flue should be properly repaired after the winter pumping season is over.

THE PORTABLE STEAM PUMP & BOILER.

This pump and boiler is in good condition ready for service.

I would call your special attention to the urgent necessity for furnishing the works with gas. The use of coal oil for lighting when gas is obtainable ought not to be continued. Many are the dangers arising from the use of the former that are obviated by using the latter.

I would here take occasion to remind you that the walls of the interior of the whole works being sheeted with wood are very ignitible. This condition of things being forced no doubt on the management by a desire to economize in the first cost. I am of opinion that if there are any buildings that ought to be made secure from fire it is the buildings of the City Water Works.

I would also call your attention to the telephone service which has given so much trouble between your office and the works. When the telephone representatives are appealed to, they lay the blame on the line, and those in charge of the line blame the instrument, between the two we are left with a miserable service

I would suggest that this station be connected with the central, this would give us a double means of reaching you and possibly remove the whole trouble.

I would also ask that an extension bell be placed in the engine room in order that we may be better able to hear your calls.

The whole respectfully submitted,

I remain your obedient servant,

D. KEARNEY, ENGR.

P. W. W.

WATER WORKS SHOP, January 1888.

B. D. McCONNELL, Esq.,

Assistant-Superintendent Water Works.

Dear Sir,

I respectfully submit the improvements, and repairs done to Main pipes, Stop Valves, Hydrants, &c., during the year ending December 1888. Also some improvements required to same, through several streets of the City, which are as follows:

REPAIRS TO MAIN PIPES AND VALVES.

There have been twenty-seven breaks on main pipes. Seventy-one joints were found blown out, making a total of ninety-eight leaks repaired on said main pipes. Twelve spindles and thirteen valves were renewed.

Schedule No. 6 shows the sizes and number of pipes and valves repaired & c.

The stop-valves in the following named streets will have to be renewed.

Water and Brock	1—6"
Common and Prince	1—6"
Canning south Side, Notre Dame	1—6"
Logan, east of Visitation	1—4"
St. Therese and St. Vincent	1—4"
Belmont and Beaver Hall Hill	1—6"
Sherbrooke west of St. Lawrence	1—10"
Dorchester west side of St. Urbain	1—10"
Dorchester west and east side of St. Denis	2—10"
Dorchester east side of Amherst	1—10"

Schedule No. 9 shows the improvements done to main pipes, which are considerable and important. The main water pipes on the following named streets should be enlarged, as the pressure of water and size of pipes are now inadequate to the size and importance of the buildings on those streets. It will not be possible to lay the pipes required this year in all those streets, but they should be laid as soon as possible. 12" main pipes should be laid in Ontario St from Delorimier Avenue through Ontario, Berthelet, Burnside to Stanley Street connecting to all intersecting streets.

Amherst Street from Craig to Rachel, connecting to all intersecting streets and to the 30" main at Sherbrooke Street.

Roy Street, from Amherst St. to St. Lawrence Main Street.

Dorchester Street, from end of 12" main at Fort St. to new projected 30" main at Atwater Avenue or one of the 24" mains now in said Atwater Avenue, Lafontaine from Delorimier Avenue 24" main, to Visitation St. 6" main.

Fullum St. from Ontario St. 24" pipe to about five hundred feet from Amity Street.

St Denis from Craig to Sherbrooke, if the street is to be permanently paved.

Sherbrooke from St. Denis to Union Avenue before it be permanently paved.

10" Mains should be laid on the following Streets:

Lagauchetière, from St. Denis to Papineau Road.

Cathcart from Phillips Place 16" main to Mansfield St. 4" main connecting to the 12" pipe in McGill College Avenue.

Bagg Street from St. Lawrence 10" pipe, running through Bagg, Prince Arthur, down University to Sherbrooke, where it should connect to 30" and 12" mains.

Six inch Pipes should be laid in the following streets:

Poupart, from Logan to St Roch.

Mignonne, from Poupart to Dufresne.

Parthenais, from Ontario to Notre Dame.

Sherbrooke, from Montcalm to Papineau.

Montcalm, from end of pipe, to Sherbrooke St., 6 main.

St. Pierre Lane from end of pipe, to Sherbrooke, 6" main.

Panet, from end of pipe south of, to Sherbrooke, 6" main.

Plessis, from end of pipe south of, to Sherbrooke, 6" main.

Maisonneuve, from end of pipe south of, to Sherbrooke, 6" main.

Dubord from St. Denis, 10" main to Campeau 4" pipe. This pipe should be laid this year.

Grey Nun, from William to Common.

Richmond from St. Antoine to St. James 10" main.

Coursol Street, from Fulford to limits.

Colborne, from William to Wellington.

The main water pipes in the following named streets, with dead ends, should be extended and connected as follows:

Adolphus 4" to Lagauchetière 6" main.

Lagauchetière east of Papineau Sq. to Papineau Sq. 10" pipe.

Papineau Square 4" main west side to Papineau Sq. [illegible]0" pipe.

LeRoyer from end of 4" to Jacques-Cartier Square [illegible] side, 4" pipe.

St. Famille from end of 6" main to Pine Avenue.

Donegani 4" to Bisson St., 4" main.

Dupré Lane 10" to St. Maurice 4"

Duke St. 4" to William St., proje[illegible]" main.

St. Luke St. from end of 6" to St. Mark, St., 6" main.
Baile St. 4" to Fort St., 6" main.
Chatham St., 4" from Payette to William St. 10" main.
Versailles St. 6" to St. James St.,4" or 10 main.
Basin 4" West of Seigneurs to Seigneurs 4" or 10" main.
Basin 4" West of Richmond, to Richmond 10" main.

HYDRANT REPAIRS, &c.

Schedule No. 6 shows the number of breaks and the nature of repairs and improvements done to the hydrants.

The number of hydrants reported frozen was four hundred and and forty-eight. three thousand one hundred and sixty-eight times, which is a great increase on previous winter, when they were reported frozen only one thousand and fifty times. This is due to the severity of last winter, and to the fact that there was a long spell of cold weather, before any snow covered the ground, which caused the earth to freeze lower than the bottom of the hydrants. In some parts the earth was frozen eight feet deep. I am very happy to say that for the last twelve years, the hydrants were always found in good order at fires, which shows that the inspectors done their duty to perfection.

Two nozzle hydrants should be put in the following streets:
Corner Ontario and St. Elizabeth.
St. Christophe, above Ontario.
Corner Ontario and Shaw.
Corner Shaw and Nonancourt.
Chausse above Sherbrooke.
Papineau Road and Logan.
St. Luke and Atwater Avenue.
Shaw above Ontario.
Gain above Ontario.
Poupart between Mignonne and Logan.
Iberville between Mignonne and Logan.
Bourgeois below Wellington.
Charron and Edinburg.
Paris and Fortune.
Edinburg, corner Liverpool.
Wellington and Liverpool.
Crescent and Burnside.
Bishop and Burnside.
Hibernian, corner Rozel.
Hibernian, corner Knox.
Ryde, corner Napoleon Road.
Grand Trunk and Island.
Mullins and Richmond.
Centre and St. Andrew.

Napoleon and St. Charles.
St. Catherine and St. Michel.
Rushbrook Street midway.

Five nozzle now freezing hydrants. Montreal Water Works Patterns should be put in the following streets.

Notre Dame and Gale.
Notre Dame and St. Michel.
Notre Dame and Frontenac.
Notre Dame and Parthenais.
Notre Dame and Shaw.
Notre Dame and McGill.
Notre Dame and Chaboillez.
Notre Dame and Murray.
St. James and Inspector.
Delorimier Avenue and Mignonne.
Delorimier Avenue and Lafontaine.
Dorchester and Papineau Road.
Dorchester and Maisonneuve.
Dorchester and Visitation.
Dorchester and St. André.
Dorchester and German.
Dorchester and St. Urbain.
Dorchester, west of Alexander.
Dorchester and Union Avenue.
Dorchester and Mountain.
Dorchester and Guy.
Dorchester and Seigneurs.
Mountain and Osborne.
Mountain and St. James.
St. Radegonde and Latour on 16" main.
Lagauchetière and Radegonde on 16" main.
St. James and Guy.
St. James and St. Martin.
Richmond opp. St. Joseph's Church.
St. Catherine and Drummond.
St. Catherine and Bishop.
St. Catherine and Atwater Av.
St. Catherine and St. Mark.
Wellington and Etienne.
Wellington and Mullins.
Wellington and Bourgeois.
Wellington and Napoleon Road.
Sherbrooke and St. Denis.
Sherbrooke and Cadieux.
Sherbrooke and St. Urbain.
Sherbrooke and Park Ave.

The position of the following hydrants will have to be changed they are now much exposed and freeze every day in cold weather:
St. Dizier and St. Paul, 5 noz. on 12" main.
LeRoyer and St. Sulpice, 5 noz. on 24" main
St. François-Xavier and St. Paul, 4 noz. on 10" main.

REPAIRS TO SERVICES.

Schedule No. 6, shows the repairs done to service pipes as can be seen in said schedule. 163 services were found broken in drain cuts. The drain crossing over pipes, when made lower tha n said pipes. are the cause of nearly all the breaks we find on our mains or service pipes.

They also cause most of our blind leaks which give the department so much trouble. Those blind leaks cannot be traced in day time; but, only in the silence of the night. Two hundred and eighty leaks were discovered and repaired last year, but there is yet a good many left, and the night examination will have to be continued until all the leaks are repaired.

Great inconvenience is caused to the department when a street or sidewalk is permanently paved without due notification. Therefore I humbly suggest that the department be notified twelve months before any such paving is made to give time to ascertain if all our pipes are in good order and lay new ones when required.

REPAIRS TO FOUNTAINS, ETC.

New drinking taps and horse troughs were put in the following streets:
St. Lawrence and St. Jean Baptiste Square.
Inspector and William Street.
William and McCord.
St. Patrick and Napoleon.

The drinking tap and trough at the corner of Papineau Road was removed to the corner of DeLorimier Ave.

Three drinking taps were put in Fletcher's field, and a hydrant for watering purposes.

Drinking taps and horse troughs should be put in the following places:
Corner Rachel and Papineau Road.
St. Denis and Mount Royal Ave.
Notre Dame and City Limits east.
Park Ave., opp. St. Jean Baptiste Street.

The horse trough at Chaboillez Sq. should be altered and a drinking tap stand added to it.

The stone drinking tap and trough, at corner Sherbrooke and Stanley should be removed to opposite the McGill College Grounds.

The trough at the corner of St. Thomas and Ottawa Streets wants a new drinking stand and fender posts.

The horse trough and drinking tap at the corner of Champlain and Ontario Streets should be removed and put opposite the wollen mills on Ontario Street. As it is now the surface water falling from it, runs into Mr. Lapointe's cellar and causes more or less damages to his house.

The fountains and troughs should be all painted this year. They have not been painted since four years and they look very bad.

New jets will have to be provided for Victoria Square fountain. The sides of this fountain will have to be taken down and replaced in concrete. This should not be done if it is to be moved as proposed.

The fountains and basins in all the squares will require the usual repairs.

It would be a good plan to pave around the troughs to keep the horses from cutting holes which keep full of water, and cause a grave nuisance to pedestrians.

The men under my charge have given general satisfaction.

I feel very much obliged to you for the good help and advice you have given me in the performance of my duties. I pray and hope that you will be rewarded for your noble efforts and the ability you have shown in the performance of the great duties imposed on you by the sickness and demise of the regretted Mr. Lesage.

Respectfully submitted,

Your Obedient Servant,

CHAS. LAGACÉ,

Foreman.

McTAVISH STREET RESERVOIR.

FEBRUARY 1st 1889.

B. D. McCONNELL, ESQR..

Asst. Supt. M. W. W.,

SIR,

I respectfully beg to submit my annual report on performance of work, conditions and requirements at McTavish and High Level Reservoirs.

THE WORTHINGTON ENGINE.

The Worthington engine which has been doing the pumping on the high level service for the past 13 years, has been replaced by a larger engine, it being too small to keep up the supply, which has so greatly increased during the past few years, and with the exception of a few light repairs is in good order and ready for duty at any moment.

THE NEW GILBERT ENGINE.

The new Gilbert engine was started on the 15th August and has given entire satisfaction, working up to his full capacity and has given no trouble whatever since it started: it is a condensing three cylinder engine, one high and two low pressure cylinders.

THE BOILERS.

The old boiler has been taken out and condemned by the boiler Inspector.

The new boiler which is of locomotive structure was put in use on March 25th, and has worked ever since with all satisfaction.

THE OLD ENGINE ROOM.

Is in the same condition as last year, the ceiling wants white-washing and the walls and woodwork varnishing.

THE NEW ENGINE ROOM.

In the new engine room is wanted a pair of travelling cranes, the beams to carrying them are already placed, also two pairs of tackles one of chain and one of rope; a new oil-cloth for floor, and is badly in need of porches for winter protection, and one or two cupboards. The walls of this building had to undergo consider-

able repair last summer, the bricks having drawn the moisture from a defective roof and decayed. The roof was covered over a new with felt and tar. The inside of the building was lined a new with hand wood boards which were oiled and varnished. A new floor was put down and heating coils in the basement to prevent feed and other pipes from freezing.

THE BOILER HOUSE.

Is in good order, it requires a new floor of flags or asphalt, there has been none laid there yet, except a few flagstones that were removed from the old boiler room, this house also wants two new porches.

THE COAL SHED.

A portion of the wall of this shed having sprung with the frost, will require to be stayed up, some of the roof will require tarring as it is leaking.

THE CHIMNEY.

Which was built for three boilers would require a sheet iron lining on the inside to the depth of about eight feet tapering to the top to improve the draught as it is too large for one boiler. Also a new cast iron door for base of chimney.

THE DWELLING HOUSE.

A new set of heating pipes will be required as the present one is eaten through with rust and leaking. A ventilator in bath room is very badly needed. The cornices of all the buildings to be painted and some broken slates on the roof to be replaced. The double windows and blinds to be painted.

McTAVISH STREET RESERVOIR.

Has been kept full during the year; the old portion of the reservoir requires repair, the entire front wall and centre wall is in a very leaky condition especially near the surface of water where the ice took the cement out of the joints.

The front slope on Carleton avenue wants a slight repair also.

THE VALVE HOUSE.

Wants new flooring over the wells, the old ones are *decayed* a *very dangerous*, those boards have been in use over 30 years. T

roof and ceiling, windows and doors want painting. There is a leakage from the well in the valve house into the dry well or waste water passage. The platform in the bottom of the tunnel is decayed and wants renewing. The waste water passage from Reservoir through McGill College grounds to University street requires to be trapped as there is a most disagreable smell arising in the valve house from the sewers, it is dangerous to go into the tunnel with foul gas; this could be remedied at a small expense.

THE GROUNDS.

Were kept in good condition last summer, the grass cut and cleaned. We will require a set of new seats on the bank grounds.

A wire fence at north side of reservoir on Carleton avenue would be of great benefit to keep people off the grass slopes.

The stone wall back of McGill College forming south and north east side of Carleton avenue will want to be seen to, a part of it has fallen into the McGill College grounds.

THE SCALE HOUSE.

Wants some repair to the brick work, also a new rough floor; the scales to be overhauled and inspected.

THE FENCING.

The wood fencing all around reservoir will require straightening and to be painted.

THE FLAGMAST

Will require a coat of paint.

THE HIGH LEVEL RESERVOIR.

The walls will require grouting and cementing as there is a leakage showing therefrom. The flooring was renewed last summer, the old one being decayed. The waste water passage to Peel street sewer wants trapping; there is a reflux valve on drain pipe, but it is not air tight and the foul air coming from sewer prevents the ice from forming in front of waste water opening in the reservoir. The drains from high level reservoir to Peel street shows a defect and should be repaired.

It is recommendable to get another new boiler in case anything should happen the present one, now that the high level is on St. Jean Baptiste ward, and on the city as far down as Grand Trunk Railway station when required for fire, we would be in a bad posi-

tion if anything went wrong with our boiler and not have one to fall back on.

It would also be recommendable to continue the 20" pipe which is part laid on McTavish street to high level reservoir, as the present one which is 12" seems too small for the pumping capacity of the new engine as it raises the pressure on gauge fully 25 lbs more than formerly.

Also I would recommend the adding of a small oscillating water engine to our works with a small fan to blow the fire in getting up steam in case we may want to start the engine in the event of a large fire, our present way takes two hours, the exhaust water could be let in the suction pipe of the other engine thus avoiding the loss of any water.

We are much in need of an ash pit, there could be one made in the bank at the end of coal shed at a small expense.

A street lamp is require outside the engine house as there are three steps on sidewalk and is very dangerous, three or four parties have been hurt there; this was reported several times already.

We have used Welsh coal for the last two years; this coal gives a high duty work, but I find it has been very injurious to the old boiler which has been taken out. I found the riveted or beaded ends of the tubes burned off, also some fire cracks in the sheets and the sheets considerably honeycombed; this destruction dit not appear previous to using the Welsh coal; it is also very destructive on the grate bars we are now using. We have to use one third American coal with the Welsh and have to keep the bars covered with American to prevent the Welsh coal from melting them down. We therefore are unable to get the same amount of work out of Welsh coal as if we could lay it next the bars, and with our present furnace cannot run more than four hours without cleaning; when we can run twelve hours with the American coal. I therefore recommend the use of all American coal and stop the Welsh altogether.

The whole respectfully submitted.

I have the honor to be, Sir,

Your obedient servant,

JAMES COLEMAN.

The following will be required for the ensuing year:

400 tons American coal.
7 cords Beech fire wood.
75 lbs Eureka rubber card packing.
50 lbs 1 inch square, plat. Plumbago packing.
1 doz. Gauge glasses for boiler.
2 doz. Rubber washers for gauge glasses.
2 yds. Rubber cloth for making joints.
25 lbs Asbestos card board for joints.
3 Tube cleaners.
2 Screw wrenches.
1 Pipe do
30 lbs Brass wire pump springs.
100 Rubber valves for pumps.
10 lbs Plumbago powder.
10 lbs Red lead for making joints.
6 doz Mudport rubber washers.
1 gross Iron washers.
2 doz. Rubber washers for oil cups.
6 balls Asbestos cord.
6 balls Cotton wick
1 doz. Small mops for oiling engine.
10 yds. Asbestos tape 1 inch wide for joints.
400 lbs Cotton waste.
4 brls. Valvoline.
50 lbs White lead.
5 gals. Paint oil.
1 brl. Coal oil for cleaning engine.
2 brl. Boiler compound.
4 quires Emery cloth No. F.
½ doz. Files.
2 gals. Turpentine.
10 lbs Copper wire for valve guards.
60 yds. Cotton to put over covering on steam pipes
300 Fire bricks.
2 bags Fire clay.
1 set Grate bars.
1 set Taps and dies for gas pipes.
1 Pipe cutter.
1 Gas tongs.
1 Pipe vice
1 set Drills (different sizes).
1 Small hand drilling machine.
2 brls. Soft soap.
1 doz. Corn brooms.
6 doz. Concentrated lye.

2 Coal scoops.
6 Deck scrubbers.
6 Scrubbing mops.
6 bags Coarse salt to kill grass on reservoir banks.
1 doz. Snow shovels.
1 Small boat for reservoir.
3 yds. Brass wire cloth for screen.
2 gals. Olive oil for hand lamps.
50 Stove pipes and 12 elbows.
15 tons Egg coal for valve and dwelling houses.

JAMES COLEMAN.

ROCK GATES MONTREAL AQUEDUCT

FEBRUARY 12TH 1889.

B. D. McCONNELL,

Assistant-Supt., M. W. W.

DEAR SIR,

The necessary repairs for the ensuing year will be the planking of Dunberry's bridge, at regulating gates of Inland cut. Greenshields' bridge requires to be taken down and rebuilt and it wants a new side beam as one of them is broken and the bridge is dangerous. On several of the other bridges the crib work wants to be repaired. Crawford and Stephenson's bridges wants planking.

Nothing has been done to the banks on Inland Cut for the last two years and there is breaks in them in several places caused by the overflow of land water, the banks on old Aqueduct needs repairs in several places as there has been nothing done to them for a long time, also the usual repairing of fences and approaches to bridges, the fence on Lower Lachine road at old Aqueduct needs fencing on each side of the stone bridge, the old cap fence along Duncan Mcdonnel, Dunberry, Sumerville, Caverhill & John Monteith's farm need to be made into picket fences, ditches on the new cut through Dunberry's on Frazer's farm, on the north side and Robert's and Dunn's on the south east side of cut need cleaning, also the berm ditches and ditches on old Aqueduct needs cleaning in the worst way, also the usual cutting of weeds; the keeper's house needs to be repaired and painted in the worst way, the kitchen roof leakes in many places and will need to be repaired.

The Basin in front of Frazer's farm needs to be fenced or a guard put round it to prevent any nuisance going into the water.

The whole respectfully submitted,

I have the honor to be, Dear Sir,

Your obedient servant,

EDWARD SALLEY,

Guardian of Aqueduct.

ROCK GATES, FEBRUARY 19TH 1889.

Number of picket fences required to be made out of cap fencing:

Along Dunberry's farm 88 pagers.
" McDonnel's " 96 "
" Somerville's " 84 "
" Greenshield's farm 37 "
" Asylum farm 43 pagers.
" Hadley's farm 53 pager.
" Monteith's " 51 "
Total 452 pagers, at 50c.—$226.00.

The house needs to be repaired at Rock, the sill is rotten and the kitchen roof leaks there will be a new front porch needed as the one that is up lets in all the rain and snow; the house needs painting outside badly it has not been painted this long time and the blinds needs painting also. The cost of repairing the house I would say will be $150.00.

EDWARD SALLEY.

REPORT OF THE WATER COMMITTEE ON INCREASING THE SUPPLY.

To the City of Montreal.

The Water Committee respectfully report that the present demand for water supply has reached the extreme capacity of the aqueduct. That the adoption of some means of obtaining an increased supply has become absolutely necessary. That your Committee are of opinion that the best means of meeting the difficulty is by completing the enlargement of the aqueduct from the end of the portion already enlarged to the wheel house. Said enlargement to be of the following dimensions; length 4 miles, breadth at bottom 78 feet; breadth at water surface 130 feet, depth of water 14 feet.

For that purpose it will be necessary to acquire the land tinted red upon the acccompanying plan. That the said enlargement will cost approximately 2,079,000 dollars, namely, for the land 104,000 dollars, for the excavation and construction of the aqueduct 1,425,000 dollars, for the erection of buildings and pumping machinery and mains 500,000 dollars. Expropriation surveying and engineering 50,000 dollars. The whole as is more fully set forth in schedule hereto attached.

That your Committee are of opinion that the necessities of the City require the completion of this work at the earliest possible moment, and, therefore, that it is expedient to complete the expropriation of the property during the coming winter, so as to be prepared to commence the excavation of at least one section during next summer. Your Committee therefore recommend that an appropriation of 134,000 dollars should be granted to them out of the consolidated capital funds of this City for the purpose of acquiring the said land, &c.

The whole nevertheless respectfully submitted.

J. S. ARCHIBALD,
FRS. MARTINEAU,
EDWIN THOMPSON,
THOS. CONROY,
VITAL GRENIER.

Committee Room
CITY HALL
Montreal Oct. 1888.

ESTIMATE FOR COMPLETION OF AQUEDUCT.

Estimate for the completion of the large Aqueduct commenced in 1874, the 1st section of which has been finished.

This estimate is based on that made by Mr. Lesage Supt. M. W.W. in 1873.

Section 2 Excavation, Bridges Stop Gates, Fencing &c., &c.	$945,000	
" 3 do do do	480,000	
		1,425,000
Wheel House, pumping machinery and rising mains		500,000
		$1,925.000
Section 2, Land 100 arps.	$20,000	
" 3, do 147 "	84.000	
		104,000
Expenses of expropriation, surveying and engineering.		50,000
		$2,079,000

MEMORANDUM RELATING TO THE REPORT OF THE WATER COMMITTEE CONCERNING THE ENLARGEMENT OF THE AQUEDUCT.

The water consumption has of late years been augmenting with considerable rapidity until at the present time it is impracticable to run the water wheels during a part of the winter, the water supply being barely sufficient for the City's consumption, as furnished by steam.

Under these circumstances it is clearly necessary that some provision should be made for an increase of that supply to meet the yearly increasing demand of the consumers.

In 1882 the average daily consumption during the year was 9, 566,759 gallons. In 1883 it rose to 10,552,174. In 1884 it was 10,687,037. In 1885 it was 11,970,504. In 1886 it was 12,642,957. Namely, an increase in four years of 3,076,198, givlng an annual average increase of a little over 769,049 gallons.

It may, therefore be fairly assumed that the increase in the daily consumption of water will be in the neighborhood of ¾ million gallons each year. The question is, how is provision to be made for this increased demand? Some years ago this subject was taken up and an elaborate report was made by Mr. Lesage, recom-

mending the construction of an enlarged aqueduct, giving a capacity of about four times that of the present aqueduct.

That plan was accepted by the Council and a portion of it carried into effect. The annexed report of the Water Committee recommends the continuation and completion of that enlargement.

The plan proposed by Mr. Lesage includes the construction of a settling basin occupying a space of some one hundred arpents at the wheel house. The present proposal does not include that feature, because, the Water Committee after consideration, is of opinion, although no definite action has been taken, that perhaps a better result than would be obtained by the settling basin can be arrived at by a system of filtration at less than one third of the cost of the settling basin.

It will be manifestly impossible at the present stage to give an estimate which could be relied on as accurate as to the total cost of the works proposed. Our officers however, after the most careful consideration, are of opinion that at the outside it will not cost more than $2,100,000 which at four per cent would involve an annual interest charge of $84 000.

Now it would be proper to enquire whether this annual interest charge would become burdensome to the City, or whether, on the other hand, the advantages to be derived from the enlarged aqueduct would not more than compensate such interest charge.

The utmost pumping capacity by water power of the present aqueduct might probably reach an average of about 10 millions of gallons daily throughout the year. The excess over that average requires to be pumped by steam.

By consulting the report of the water works for 1886 we find the following. "The pumping works comprise three turbine wheels and one breast wheel of a joint capacity of twelve and a half millions of gallons per twenty four hours and three steam pumping engines of twenty-one millions of gallons per twenty-four hours."

The total quantity of water pumped by water power during the year was three billion, eight hundred and seventy-three millionsand six hundred and forty-seven thousand gallons with an expenditure of six thousand, two hundred and seventy-one dollars and fifty-two cents, making one dollar decimal six hundred and nineteen per million gallons raised one hundred and sixty-nine feet high,viz : the height of the reservoir above the settling pond.

The total quantity pumped by steam power during the same time is 741,033,000 gallons with an expenditure of $17,331.37 or $23.388 per million gallons raised 169 feet high.

In the same report is found a comparison of the cost of pumping by water and by steam for twelve years from the year 1875 to 1886, whereby it appears that the cost of pumping by steam is a little more than eleven times that of pumping by water. It follows

from what is above stated, that, even, supposing our present aqueduct were sufficient to supply the water necessary for steam pumping that the increased consumption, namely, 750,000 gallons daily, each year, would require to be entirely accomplished by steam and the $17,331 spent in 1886, which represented about two millions of gallons daily would be very rapidly augmented as the quantity required to be pumped by steam increased from year to year.

It is true that by making improvements in our steam pumping engines a much greater economy has been secured for steam pumping, but yet the difference between the cost of pumping by steam and pumping by water is very great.

If the increase in consumption above referred to goes on for, say, twenty years, from this date, the daily consumption at that period would be about thirty millions of gallons per day, of which, at least twenty millions would be required to be pumped by steam, and if it cost $17,331 to pump two millions of gallons daily by steam in 1886, it would be very easy to calculate what it would cost to pump twenty millions of gallons a day by steam power: namely $173,310.

Supposing, however, that by increased economy in the engines this could be reduced to one half of that amount, it would still leave the cost more than sufficient to cover the total interest charge upon the amount necessary to complete the aqueduct.

In addition to this there is also a further consideration that the supply of water from the present aqueduct has reached its maximum. We cannot supply any considerable additional amount. That being the case our revenue from the water supply has almost reached its maximum limit.

Taking 1886 as an example we find that the water revenue of that year amounted to $520 145 and the amount of water consumed amounted to four billions six hundred and fourteen millions and six hundred and seventy-nine thousand gallons. That gives about eleven cents $\frac{27}{100}$ per thousand gallons furnished. Now, taking the annual increase at seven hundred and fifty thousand gallons per day, that would amount to a revenue of $84.50 per day or $30,842.00 per annum. By the increased supply the City's revenue would consequently augment $30,842, double that the second year, three times that the third year and so on until the limit of supply should be again reached.

Now, the enlarged aqueduct as proposed will be undoubtedly ample to furnish fifty millions of gallons of water daily, if requisite, so that for present purposes the supply might be considered practicably inexhaustible, as probably fifty years would elapse before any such supply would be required.

In addition to this increased source of revenue, there would exist at the pumping works when the new aqueduct is completed

a disposable power amounting to at least, one thousand horse power, which could be utilized by the City for any purpose needed.

The Water Committee does not intend to interfere with the business of any other Committee but merely throws out what follows as an illustration of the use which might be made of the water power above mentioned if the Council thinks proper to avail itself of it. Part of the City is already lighted by electricity at a cost of about sixty cents per lamp per day. It is computed that about one horse power is necessary to generate electricity to supply one arc lamp. Of the sixty cents above mentioned, two thirds, at least, represent the cost of the power to produce the electricity. It is also estimated that it would require somewhere in the neighborhood of one thousand lamps to thoroughly light tho whole City with electricity. The electricity required to supply these lamps could be all produced at the wheel house by the use of the power there accumulated by the enlarged aqueduct.

Supposing the saving upon each lamp by using water power amounted only to thirty cents ; upon one thousand lamps it would save three hundred dollars per day and one hundred and nine thousand five hundred dollars per annum.

The foregoing figures are not intended to represent accurate calculations, but only to be approximately correct.

It will be perceived that if only half of the advantages above set forth to be derived from the completion of the work referred to in the Water Committee's report was to be realized, that work would still be greatly in the interest of the City. It is not anticipated that the whole work could be completed in a single year, perhaps two or even three years might be required for its entire completion, but it is urgent that the land requisite should be immediately acquired, because the longer it is delayed the more expensive will it become.

TEST OF HIGH DUTY WORTHINGTON ENGINE.

To the Chairman and Members of the Water Committee of the City of Montreal.

GENTLEMEN,

We the undersigned having been appointed by your honorable Board to test the new Worthington high duty pumping engine, erected in the building known as No. 1 Engine House of the Montreal Water Works, with the object of ascertaining whether or not the engine comes up to the contract requirements which are that the engine pump ten (10) millions of imperial gallons of water in twenty-four hours against a constant reservoir pressure of eighty (80) pounds pressure per square inch, including friction in water mains with a steam pressure of eighty (80) pounds and a piston speed of one hundred and ten (110) feet per minute; the city furnishing steam at eighty (80) pounds per square inch with an evaporative duty of nine (9) pounds of water per pound of coal.

The above engine has two (2) high pressure cylinders 28¾ inches dia.; two (2) low pressure cylinders 57½ inches dia. and two (2) water plungers 31½ inches diameter and all of 50 ins. stroke.

The racent performances of the engine previous to the test, made it clear to your experts that one departure from the letter of the contract, would have to be made in order that every thing would be definitely settled before the test commenced; your experts and those of the contractors discussed the following points and settled the same as follows:

1st. The circular issued calling for tender which are made an essential part of the contract state: that steam will be furnished by the City at eighty (80) pounds pressure, and that the engine will be required to work at a proper speed against a constant reservoir pressure of eighty (80) pounds per square inch, including friction of mains.

It will readily be seen that the forcing of ten (10) millions additional gallons of water, through the same mains, must necessarily raise the pressure which is now found to be, instead of eighty (80) pounds with the new engine working, 92.5 pounds.

In order that this may be fairly met, one of two things had to be done, either to stop some of the hydraulic machinery and lower the water in the reservoir so as to reduce the pressure to the required limits or allow an increased steam pressure equal to the increased water pressure pound for pound.

The former was difficult and expensive and would be attended with much fluctuation, therefore the steam pressure was allowed.

2nd. One of the new economical devices in connection with the engine is that the steam used in the cylinder jackets when con

densed there is trapped and returned to the boilers, at the temperature of the steam, by a small pump for the purpose. Hitherto this water has been wasted, as is the case with our old Worthington engine.

The quantity of water in pounds returned to the boiler in this manner at the gravity due to its temperature was found to be 21551 pounds. If this water had not been returned, its equivalent would have to be furnished at the natural temperature of the water.

The contractors claimed that they be allowed the difference in temperature, or in other words that they be allowed for the heat they put into the water.

It was allowed.

3rd. The contract states that the contractor will be furnished with an evaporation of nine (9) pounds of water per pound of coal, and steam at eighty (80) pounds, they claim that the percentage of water found in the steam be allowed them.

In order that this percentage should be ascertained, calorimeter tests were made every three hours during the trial, the result of which proved that there was $5\frac{1}{10}$ % of water carried over with the steam.

The claim was allowed.

4th. The temperature of the water in its natural state was found to be 71°, and entering the boiler, 189°, the additionnal heat being added by means of a special arrangement utilising the exhaust steam from the auxiliary pumps which form a portion of the engine proper.

The contractor asked to be allowed for the heat put into this water, which was allowed.

5th. The plunger slippage was estimated at one and one half per cent, this being the average slip found by many weir measurements in the United States. Weir measurements in our case would be difficult and expensive.

In submitting our report we do not deem it necessary to enter into a description of the new mechanical arrangements, which distinguish this engine from the well known old Worthington engine as such has already been fully described to the world in papers, pamphlets and periodicals which no doubt have reached the greater portion of the mechanical engineering profession.

The contract stipulates that the duty is to be ascertained by a special test.

There being no definite length of trial stated in the contract, the Worthington representatives and the undersigned agreed upon a test of twenty-four (24) hours, which was conducted in the following manner

The fires were lighted at 5 o'clock A. M., steam being raised slowly, the engine was started at 8 o'clock A. M and got up to full speed at 11 o'clock A. M.

The test commenced at 12 o'clock noon, when a full reading of all gauges was taken, and height of water in the boiler glass gauges taken and noted, the steam, water and vacuum gauges were read and noted every half hour. Two revolution counters were used, both worked faithfully; the water meter was taken every half hour and the same tested ten times during the trial; complete sets of cards were taken.

The boilers are of the Heine type, two being used to furnish steam to the engine on trial, and the other furnished steam to work the independent boiler feed pump.

The water steam and other gauges were tested before and after trial, also the indicators.

The engine worked smoothly and well, a detailed result of the observations will be found in the table annexed to this report.

We have much pleasure in stating that the contractors' representatives acted throughout the trial in a manner that reflects the highest credit upon themselves and the company they represent, manifesting a spirit of fairness that made our duty agreable.

The whole respectfully submitted,

We have the honor to be, Gentlemen,

Your humble servants,

D. KEARNEY,
ED. OCT. CHAMPAGNE.

Montreal, 4th August 1888.

RESULT OBTAINED ON TEST OF NEW WORTHINGTON ENGINE AT WHEEL HOUSE M. W. W. 30th AND 31st OF JULY 1888.

Test commenced at 12 o'clock noon, 30th July 1888.
" ended 31st " "

1.—Duration of test .....24 hours.
2.—Reading of counter at commencement of test.....239158
3.—Reading of counter at end of test.....249878
4.—Total number of counts made by engine.....19040
5.—Total number of strokes made by engine.....76240
6.—Average length of strokes in feet, 4.165.....4.165
7.—Total travel of plunger in feet, (5) x (6).....3175.396
8.—Total travel of plunger in inch, (7) x 12.....380047.5
9.—Average area of plunger in square ins.....76221
10.—Total displacement of plunger in cub. ins, (8)x(9) = 2904382.127
11.—Total imp. galls. pumped in 24 hrs. (10)÷277.274..10,471.166
12.—Excess above guarantee.....471.166
13.—Percentage of excess above guarantee, (12)÷10,000,000 × 100 = ...$4\frac{7}{10}\frac{1}{0}$ %

14.—Deducting percentage of slip = ... $1\frac{50}{100}$ %
15.—Net percentage of excess above guarantee,(13)—(14) = $3\frac{21}{100}$ %
16.—Average piston speed of engine for 24 hrs = (7) ÷ 2—1440 = 110 ft
17.—Average head on plunger..... .....92.5
18.—Total load on plunger, = (9) x (17) = ... 70504425 lbs
19.—Total foot pounds of work done by engine in 24 hrs.
= (7) × (18) = ... 223879469.1273
20.—Reading of meter counter at commencement of test.....13592
21.—Reading of meter counter at end of test..... 16883
22.—Total cubic feet registered by meter.....3291
23.—Weight of one cubic foot of water as determined by
testing meter =.....65.8
24.—Total weight of water registered by meter in pounds
(21) x (23) 216547.8
25.—Average temperature of feed .....187°
26.—Average temperature of water in basin .....71°
27.—British thermal units required to evaporate one pound
of water from 71° to steam at 89 lbs = ... 1143.7
28.—British thermal units required to evaporate one pound
of water from 89° to steam at 89 lbs. pressure..... 1025.7
29.—Total equivalent lbs. of water evaporated at tempe-
rature of 71° = (24) ÷ (27) × (28) = ... 194205
30.—Water wasted in testing meter.....1974.5 lbs.
31.—Water wasted in testing steam =.....100 lbs.
32.—Total water to be deducted from feed, (30) × (31) = ...2074.5 lbs
33.—Jacket water returned without being metered = ...14636.95
34.—Net feed water consumption by engine—(29)—(32) + 33)
and deducting for water in steam..... 196222 3
35.—Foot lbs. duty of engine per 100 lbs. of coal on 9 galls.
basis, (19) ÷ (35) × 100 =.....102,685,369
36.—Coal consumed on basis of 9 lbs of water per pound
of coal, (34) ÷ 9 = ...21802.47
37.—Excess of duty above guarantee = ...17,685,369
38.—Percentage of excess above guarantee, (37) ÷ 85,000,000
× 100 = ...$20\frac{80}{100}$ %

FIRST TEST OF HEINE SAFETY BOILERS.

To the Chairman and Members of the Water Committee

GENTLEMEN,

On the 26th and 27th September instant we made a trial of the Heine boilers in the Montreal Water Works, the results of which are shown in the following report.

The boilers are of the water tube type manufactured by George Brush, of this City, under the Heine patent. Each containing 1400 square feet of heating surface and 37 square feet of grate surface. These boilers were erected side by side and connected so that they could be used seperately or conjointly. All the boilers were connected to a single chimney. These boilers were intended to supply steam to the high duty Worthington pumping engine.

TRIAL OF THE BOILER.

In accordance with your instructions that the test should extend over a period of 32 hours divided into two runs of 16 hours each, the test commenced at 8.25 A. M. September 26th and continued until 12.25 A. M. September 27th, making the first run of 16 hours. The second run commenced at 6 A. M. September 27th and continued until 10 P. M. September 27th, making the 2nd run of 16 hours and completing the 32 hours in all.

During the trial all the coal consumed was weighed in a wheelbarrow, balanced when empty by a fixed weight, and each barrow load was adjusted at the scale to weigh 200 lbs. net

All the water evaporated was accurately weighed in a tank specially provided for that purpose.

A complete record was kept of the coal water steam pressure and various temperatures, and the quality of the steam was tested with a calorimeter at intervals. The coal fired was Scotch coal.

The results of the trial are as follows:

Average steam pressure	110 lbs.
" temperature of fire-room	76°
" " of feed water	63°
" " of uptake by Pyrometer	575°
Total coal fired	22166 lbs.
" water pumped	136091 "
" " entrained in the steam, 2.84 per cent	3865 "
" " evaporated	132226 "
Equivalent evaporation from and at 212°	158274.5 "
Evaporation per lb. of coal under actual conditions	6139 "
Equivalent evaporation from and at 212°	7.14 "

Water evaporated per 8 square feet of heating surface from and at 212° ..... 28.26 lbs.
Water evaporated per square feet of heating surface from and at 212°..... 3.53 "
Coal per hour per square feet of grate surface..... 18.718 "
The whole respectfully submitted.

ED. OCT. CHAMPAGNE, M. E.
WALTER H. LAURIE, M. E.

Montreal, 29th September 1888.

To the Chairman and Members of the Water Committee of Montreal.

GENTLEMEN,

I hereby certify to the correctness of the figures and results obtained from the 32 hour test at the pumping Station on Sept. 26th. and 27th. 1888 as reported by your experts Mr. E. O. Champagne and Mr. Walter H. Laurie.

The test was carefully and fairly conducted throughout and at all times your experts and myself were in thorough accord as to the manner and means employed in conducting the test. The test, however, fell short of our usual standard, owing entirely to the quantity of coal fired.

It was what is termed Scotch Steam Coal and was full of slate sulphur and dirt. It also formed when burning an iron clinker which ran down adhering to the grate bars thus very much reducing the efficiency of the fires. Furthermore it burned very quickly, but with a smoky red flame that carried with it but little heating capacity beyond the grate bars.

Under the above circomstances I must respectfully protest against the use of such coal for testing purposes.

From my intimate knowledge of the Heine type of boiler from many practical tests with Cumberland coal, I can conscienciously assure you that if Cumberland coal were used, the results would be at least 45 to 50 per cent higher than those given in the test of September 26th and 27th.

The whole respectfully submitted.

ROBERT M. HUSTON,
Mechanical Engineer.

SECOND TEST OF HEINE SAFETY BOILERS.

To the Chairman and Members of the Water Committee.

On the 26th and 27th of September last a trial was made of the Heine boilers in the Montreal Water Works, the results of which were not up to the guarantee. Since then the contractors have made changes in the grate bars and also in the furnace construction and a second trial was made on the 2nd of November inst.

The day commenced clear with barometer standing at 30.18. At noon, however, it commenced falling until at 5 o'clock it reached 29.90 and rain began which lasted all evening. The boiler was what is known as the Heine E. 16 and is rated at 200 horse power, and has the following principal dimensions:

1. Upper drum or shell, 48 ins. dia. and 19 feet 6 ins. long.
2. 87 tubes 3½ ins. dia. and 16 feet.
3. Heating surface 1450 sqr. feet.
4. Grate surface 37 " "

Before starting the test the boiler was approved and found to be clean. Tanks were prepared for carefully measuring and weighing the water. Scales were prepared and adjusted for weighing the coal. A feed water thermometer was put in the feed pipe and a pyromoter was put in the smoke flue near the boiler opening. A calorimeter was adjusted on scales and the quality of steam tested at intervals. The percentage moisture was shown to be only 56 of one per cent which is *pratically dry steam.* The fuel used was what is known here as Cumberland coal. This was carefully weighed out and dumped on the floor in 600 pounds lots. The water was weighed in an upper tank then drawn off into a lower one, and thence pumped to the boiler.

The following are the results:

Average steam pressure	108 lbs
Temperature of boiler room	83°
" of feed water	153°
" of flue gases	437°
Total fuel (Cumberland coal) fired	12078 lbs.
" water evaporated under actual conditions	109600 "
Equivalent evaporation from and at 212°	120888 "
Water evaporated per pound of coal, per hour, under actual conditions	9073 "
Equivalent evaporation from and at 212°	10.008 "
Water evaporated per square feet of heating surface per hour from and at 212°	5.21 "
Water evaporated per 8 sq. feet of heating surface per hour from and at 212°	41.68 "

Coal consumed per hour per sq. ft. of grate surface.....	20.40	"
Water evaporated per lb. of coal per hour from and at 212° deducting entrainment.....	9.952	"
Percentage of ash.....	6.36	"
Total combustible	11310	"
Water evaporated per lb. of combustible, from and at 212°.....	10.68	"
Horse power developed.....	251.83	"

The whole respectfully submitted.

ED. OCT. CHAMPAGNE, M.E.
WALTER H. LAUTIE, M.E.

Montreal, 6th November1888.

TEST OF GILBERT ENGINE.

To the Chairman and Members of the Water Works Committee.

GENTLEMEN,

We the undersigned named by your Committee as experts to examine, test and report upon the Pumping Engine and Boiler, built by Messrs. E. E. Gilbert & Sons, for the high level service station on McTavish Street, and see that the requirements of the contract for the construction of the said engine and boiler have been complied with: after a careful examination of the same and test of twenty-four hours, beg to report as follows:—

1st Requirement: An Engine and Boiler capable of pumping 2,000,000 Imperial gallons in 24 hours.

1st Result: at test, 3,333,744 Imperial gallons were pumped in 24 hours.

2nd Requirement: an Engine and Bolier capable of raising 80,000,000 foot pounds per 100 lbs. coal burnt.

2nd result: at test 100,065,762 foot pounds were raised per 100 lbs. of coal burnt without any allowance for ashes or anything whatsoever.

3rd Requirement: there shall be a surface condenser, one boiler feedpipe, steam pipe and connections, suction pipe with foot valve, delivery main, with check valve, and " to do and perform all works, machinery and accessories thereof required in the premises."

3rd We find that the whole of the requirements of the last above written clause have been complied with.

4th Requirement: that the pistons speed (or velocity) shall not be more than 84 feet per minute, against a head of water of 140 feet with a pressure in boiler of not more than 125 lbs. per square inch.

4th Result: at the test the average velocity of pistons was 237,268 feet per minute, against an effective pressure of 121.5 lbs. per sqr. inch which equals a static head of 280 ft. with an average boiler pressure of 119.18 lbs. per sqr. inch.

5th Requirement: that there shall be one high pressure cylinder 18 inches dia. and 2 feet 6 inches stroke. Also two low pressure cylinders 24 ins. dia. and 2 feet 6 ins. stroke.

5th: We find that the cylinders are as follows:—

High pressure, one cylinder 18 ins. dia., 2 feet 6 ins. stroke. Low pressure, two cylinders 24 ins. dia., 2 feet 5½ ins. stroke.

6th Requirement: that there shall be three double acting pumps with plungers of 13½ ins. dia. and 2 feet 6 ins. stroke.

6th: We find that there are three double acting pumps with plungers of 10 ins. dia., one having 2 feet 6 ins. stroke and the other two having 2 feet 5½ ins. stroke.

7th Requirement; that the engine shall be provided with a steam, a water, a vacuum guage and sight feet lubricators to all the cylinders, also with tools for engine and boiler.

7th: We find that the items mentioned in the last above written requirement have been provided.

8th Requirement: That engine shall be of good material, substantial, and made in a workmanlike manner.

8th: We find the engine made of good material (many of the parts being of steel) substantial, and of the very best workmanship; and after the test upon opening and examination of the bearings we found them in first class condition and with everything else in perfect order.

9th Requirement: that there shall be 1000 square feet of heating surface in the boiler.

9th: We find that the boiler is made of steel, and is complete, of the best workmanship throughout, of the locomotive type having 1107 sqr. feet of heating surface, and is provided with all the necessary tools for firing and cleaning. Also a super heater and feed water heater, the whole admirably constructed in every respect and complete in every way.

10th Requirement: that the engine and boiler be provided with proper foundations.

10th: We find that the requirement has been properly complied with.

11th Requirement: that the engine and boiler shall be properly covered with non-conducting material.

11th: We find that this has been done and in regard to the engine in a very handsome and elegant manner.

We remark that the engine and boiler are in every respect equal in construction, proportions and design to any made by the very best makes in England or the United States; in fact we are of the opinion that very few engines and boilers if any can, as a whole be found to equal them.

The motion of the engine is perfectly graceful and smooth; and the speed not excessive even when making 48 revolutions per minute, so that with proper care it should last a long time without any extensive repairs, and we recommend that the engine and boiler be accepted by you.

The following particulars were taken at the examination and test of the engine and boiler.

THE TEST.

1. The test commenced at 12 o'clock noon, on the 29th Octo[1] 1888 and ended on the 30th.

2. Duration of test, 24 hours.

ENGINE AND PUMPS.

3. Reading of counter at beginning of test 319.578
4. Reading of counter at end of test.....388.679
5. Total number of counts made by Engine.....69.101
6. Total number of strokes made by pumps.....414.606
7. Average length of strokes in feet.....2·47166
8. Total travel of plungers in feet.....1,024,998·1666
9. Total travel of plungers in inches.....12,299,978
10. Average area of plungers in sqr inches.....75·1514
11. Total displacement of plungers in cubic ins....924,360,566·6672
12. Total Imperial gallons pumped in 24 hours (1 Imperial gal. = 277·274 cub. ins.).....3,333,744
13. Excess above contract (2,000,000).....1,333.744
14. Percentage of excess above contract .....$66\frac{68}{100}$%
15. Average piston speed per minute during run of 24 hours in feet..... 237.268
16. Average pressure on plungers of pumps per square inch in lbs.....121.5
17. Total load on plungers in lbs.....9130.85
18. Total ft. lbs. of work done by Engine in 24 hrs.935915073752·56
19. Duty of Engine in ft. lbs. per 100 lbs. coal cons'd...100.065.762
20. Excess of duty above contract.....20,065.762
21. Percentage of excess of duty above contract.....$25\frac{8}{100}$%

BOILER.

22. Total weight of feed water supplied from tanks in lbs..81538·5
23. Total weight of water from jackets of cylinders and receiver returned to boiler (lbs).....9776
24. Grand total of feed water in lbs ..... 89314·5 (Steam wasted @ 119.18 pressure 120 lbs. equal to 12.55 lbs. of coal.)
25. Average temperature of feed water in tank .....50° Fah.
26. Aver. temper. of feed water on entering boiler.....143° "
27. Average pressure of steam in boiler per sqr in.....119.18 lbs.
28. Area of grate surface in sqr. ft.....11.9
29. Area of heating surface in sqr. ft.....1107
30. Number of square feet of heating surface to 1 foot of grate surface..... ... 93
31. Number of lbs. of coal burnt on each sqr feet of grate surface per hour.....32·60
32 Pounds of water from and at 212° F. evaporated by lb. of coal (feed water @ 143° F.) .....10·65
33. Number of lbs. of water evaporated for each sqr. ft. of heating surface per hour.....3·36
34. The steam being superheated showed 2·88° F. of superheat by calorimeter test.
35. Pounds of coal consumed during test.....9353
36. Pounds of ashes gathered and weighed after test 603

During the test, Indicator Diagrams were taken at each hour of each of the cylinders of the engine and of one of the pumps, and an average card of each is hereunto annexed, also a combined diagram of the whole engine, from which it will be seen that the engine developed an average of 211.9 *Indicated Horse power*.

The coal used at the test was provided by the Montreal Water Works and was Welsh Anthracite.

Every facility was given us by Mr. Gilbert and his employees to make any examination we desired. Also assistance was rendered us by the Montreal Water Works Department to furnish us with the necessary means of making the test complete and reliable.

We would remark that at the test the engine was run without regard to strict economy, had this been observed and the engine run at just such a speed as would have accomplished the pumping of 2,000,000 Imperial gallons in 24 hours, we have no doubt in saying that a higher duty of 25 per cent on that obtained at the test could have been reached.

We consider it our duty to advise you that a second boiler of the same type and capacity should be placed at the McTavish Street pumping station, and connection should be made with the old engine.

We have the honor to be, Gentlemen,

Your Obedient Servants,

Signed { CHARLES G. C. SIMPSON,
E. O. CHAMPAGNE,
J. EMILE VANIER.

No. 1.—Schedule showing the work of Turbine No. 1.

MONTHS.	Time of pumping.	Revolutions.	Gallons pumped.	Castor Oil.	Tallow.	Coal Oil.	Seal Oil.	Cotton Waste.	Coal for heating.
	Hrs. M.			In pounds.					
1888									
January	744.00	595,772	138,814,876	148.50	.....	152.00	.....	26.00	87350
February	284.15	179,411	41,802,763	60.75	.....	119.00	.....	25.00	97960
March	17.00	13,598	3,168,334	18.00	.....	104.00	.....	15.00	79100
April	711.15	560,679	130,638,207	163.25	35.00	133.00	.....	27.56	48410
May	740.30	584,470	136,181,510	270.00	48.00	146.00	.....	28.68	10050
June	720.00	579,211	134,956,163	265.50	48.00	120.00	.....	26.68	
July	744.00	573,310	133,581,230	276.75	40.00	124.00	.....	24.00	
August	737.35	518,276	120,758,308	279.00	40.00	134.00	.....	24.75	
September	707.05	492,735	114,807,255	193.50	40.00	150.00	.....	29.25	
October	744.00	525,618	122,468,994	139.50	.....	162.00	.....	28.50	18030
November	710.45	525,245	122,382,085	132.75	.....	168.00	.....	26.37	56640
December	725.10	555,029	129,321,757	135.00	42.00	197.00	.....	26.00	94760
Total	7,585.35	5,703,354	1,328,881,482	2,082.50	293.00	1,709 00	.....	307.79	492,300
Last year	8,674.35	6,420,063	1,495,874,679	1,863.00	275.00	1,769.00	14.00	279.12	469,580

No. 2.—Schedule showing the work of the Breast Wheel and Turbine Nos. 2 and 3.

MONTHS.	Time of pumping.			Revolutions.			Gallons pumped.	Castor Oil.	Coal Oil.	Cotton waste.
	Breast wheel.	Turbine No. 2.	Turbine No. 3.	Breast wheel.	Turbine No. 2.	Turbine No. 3.		In pounds.		
	Hrs. M.	Hrs. M.	Hrs. M							
1888										
January	387.20	121.00	381.15	282,654	76,125	457,197	92,418,234	105.75	152.00	22.00
February	....	....	348.15	....	....	389,995	33,539,570	74.25	119.00	12.00
March	....	35.30	659.20	....	21,078	733,793	66,225,742	120.87	104.00	22.00
April	432.20	301.55	521.30	337,053	206,887	605,816	132,603,296	164.25	133.00	28.00
May	737.40	740.40	744.00	597,638	548,781	919,894	248,780,896	272.25	146.00	34.56
June	716.20	717.35	720.00	590,142	561,485	925,334	250,019,520	265.50	120.00	27.56
July	737.35	733.40	744.00	594,977	523,502	925,867	249,599,454	279.00	124.00	33.50
August	734.20	740.30	744.00	573,212	500,848	828,532	230,214,632	279.00	134.00	28.92
September	699.45	691.20	694.45	467,963	435,766	725,992	196,187,204	258.75	150.00	25.67
October	724.50	324.15	727.10	499,515	180,811	815,753	170,843,006	191.25	162.00	32.00
November	661.40	440.20	645.50	490,028	289,213	722,157	177,433,175	219.25	168.00	27.00
December	625.30	78.00	638.25	485,016	48,440	770,135	145,183,098	144.00	197.00	31.10
Total	6,457.20	4,924.45	7,572.30	4,918,198	3,422,936	[illegible]820,465	1,993,047,827	2,374.12	1,709.00	374.77
Last year	7,529.30	4,922.55	7,327.45	[illegible]	[illegible]	[illegible]	[illegible]	2,197.75	1,771.00	[illegible]

No. 3.—Shedule showing the work of Steam Engine No. 1.

MONTHS.	Pumping time.	Revolutions	Gallons pumped.	Coal used–pounds		To raise 1,000,000 gallons	Seal oil.	Castor oil.	Coal oil.	Cylinder oil.	Cotton waste.
	Hrs. M.			For pumping	For banking fires.		In pounds.				
1888											
January	109.00	65,301	35,915,550	156,060	4,930	4,482	20.00	13.50	16.00	40.63	
February	696.00	472,563	259,909,650	1,028,040	.....	3,966	46.56	65.25	224.00	268.12	31.00
March	636.30	437,535	240,644,250	919,320	13,630	3,876	6.56	70.00	232.00	251.87	25.00
April	390.00	210,718	115,894,900	522,370	.....	4,507	40.00	36.00	144.00	130.00	12.25
May	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
June	39.55	23,775	13,076,250	55,640	14,720	5,380	.....	11.25	16.00	48.00	10.00
July	102.25	79,550	43,752,500	160,340	20,420	4,131	16.00	31.50	24.00	112.00	16.56
August	58.15	45,154	24,834,700	91,550	13,330	4,223	.....	22.50	.....	56.00	16.00
September	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
October	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
November	21.35	14,446	7,945,300	30,550	13,020	5,483	.....	6.00	8.00	22.50	14.00
December	217.20	158,365	87,100,750	303,850	38,180	3,926	60.00	66.00	144.00	173.00	25.00
Total	2,271.00	1,507,407	829,073,850	3,267,720	118,230	4,083	189.12	322.00	808.00	1,102.12	149.81

No. 3*a*.—Schedule showing the work of Steam Engine No. 3.

MONTHS.	Pumping time.	Revolutions.	Gallons pumped.	Coal used–pounds		To raise 1,000,000 gallons.	Average pressure on pump piston.	Seal oil.	Castor oil.	Coal oil.	Cylinder oil.	Cotton waste.
	Hrs. M.			For pumping	For banking fires.			In pounds.				
1888												
January.....	552.10	280,483	122,290,588	692,850	12,440	5,767	75	40.00	47.25	184.00	308.63	17.75
February....	215.30	113,003	49,269,308	270,830	35,350	6,214	75	40.00	20.25	88 00	89 37	21.00
March.....	453.15	286,850	125,066,600	646,540	31,870	5,424	75	60.00	38.25	144.00	260.25	30.00
April.	60.00	38,871	16,947,756	97,260	11,920	6,442	75	.....	4.50	16.00	48.75	10.00
May	97.45	65,033	28,354,388	164,260	17,040	6,394	75	.....	9.00	24.00	81.12	10.00
June.....	91.45	61,336	26,742,496	133,160	13,570	5,486	75	.....	9.00	32.00	64.00	10.00
July.....	167.35	119,985	52,313,460	268,930	25,020	5,619	75	.....	22 50	16.00	128.00	10.00
August.....	230.55	150,467	65,603,612	344,510	42,100	5,893	75	.....	29.25	160.00	160.00	16.00
September...	339.45	224,952	98,079,072	509,030	64,700	5,849	75	18.18	36.00	16.00	207 50	20.50
October.....	368.05	253,374	110,471,064	595,910	56,910	5,909	75	32.00	33.75	64.00	210.00	18 00
November...	232.45	148,252	64,637,872	347,590	37,730	5,961	75	40.00	28 25	64.00	165.00	16-00
December ...	6.00	3,775	1,645,900	7,370	.....	4,477	.....	.....	.....	.....	.....	
Total.....	2,815.30	1,746,381	761,422,116	4,078,240	348,650	5,814	.....	230.18	278.00	808.00	1,722 62	179.25

No. 4. Schedule showing the work of High Level Service Engine.

MONTHS.	Pumping time.	Revolutions.	Gallons pumped.	Coal used—pounds.			Average pressure on pump pistons.	Castor oil.	Valvoline.	Cylinder oil.	Cotton Waste.	Coal for Heating.
	Hrs. M.			For pumping	For banking fires.	To raise 1,000,000 gallons.		In pounds.				
1888												
January	307.15	463,612	5,563,344	48,661	10,109	10,561	100	2.50	27 00	....	7.00	722
February ...	297.30	452,035	5,424,420	47,154	9,522	10,448	100	2.75	29.00	....	7.00	2146
March.....	286.00	432,664	5,191,968	48,184	9,285	11,068	100	2.50	27.00	....	7.00	1280
April.....	294.30	417,848	5,014,176	53,467	6,783	12,015	100	1.75	31.00	....	6.00	....
May	301.30	467,091	5,605,092	54,934	7,122	11,071	100	1.00	75.00	....	6.00	....
June..... ...	357.00	524,288	6,291,456	57,553	8,568	10,509	100	3.00	50.00	....	4.00	....
July	586.35	866,561	10,398,732	93,852	3,717	9,382	100	5.00	90.00	....	12.00	....
August.....	298.00	409,149	7,609,581	45,977	6,567	6,904	100	1.25	18.00	92.00	26.00	....
September..	76.25	162,906	7,844,087	20,027	7,905	3,561	113.55	....	....	144 00	30.00	....
October.....	75.25	188,898	9,095,629	24,223	5,043	3,217	116.45	....	....	88.00	20.00	3224
November..	66.30	137,680	6,629,430	15,525	7,584	3,485	105.53	....	....	100.00	25.00	5187
December ..	74.30	152,047	7,321,215	18,913	8,761	3,780	110.00	....	....	110.00	16.00	7046
Total.....	3,021.10	4,674,779	81,989,130	528,470	90,966	7,555	....	19.75	347.00	534.00	166.00	19605

No. 5.—Schedule showing the depth of water, the rain fall and the average temperature at 9 a.m. at McTavish Street Reservoir.

MONTHS.	Average monthly depth in feet.	Rain gauges in inches.				Average temperature at 9 a. m
		Rain.	Snow.	Snow reduced to rain.	Total rain.	
1888						
January	22.72	.....	32.50	2.82	2.82	8.29
February	22.71	0.18	27.00	2.82	3.00	15.89
March	22.83	0.19	21.75	2.04	2.23	22.32
April	21.87	0.53	3.25	0.41	0.94	31.16
May	21.62	2.12	.....	.....	2.12	51.48
June	21.57	3.57	.....	.....	3.57	64.73
July	21.70	0.82	.....	.....	0.82	62.60
August	22.52	9.12	.....	.....	9.12	61.89
September	21.87	3.45	.....	.....	3.45	54.54
October	22.25	4.10	.....	.....	4.10	42.32
November	22.43	1.92	5.25	0.69	2.61	33.40
December	22.47	0.70	13.25	1.67	2.37	24.22
Total	.....	26.70	103.00	10.45	37.15	.....
Last year	.....	18.88	152.49	14.30	32.18	37.66

Schedule No. 6.

Report of leaks on mains, hydrants, valves, during year 1888.

Description.	12"	10"	6"	4"	Hydrant valves renewed.	Hydrants replaced by non-freezing hydrants.	Hydrants replaced	Hydrant rods broken.	2 noz. hydrants (old kind) replaced by 5 noz. hydrants
Mains broken.....	0	0	10	17					
Joints blown out ...	9	14	14	34					
Stop-valves renewed	0	2	4	7					
Spindles renewed...	0	2	3	7					
					95	38	1	17	18

Leaking over drains.	Couplings leaking.	Burst in wall.	Cocks renewed.	Wooden boxes replaced by iron ones.	Pipes choked.
163	52	36	25	210	40

Service pipes frozen outside.	Pipes frozen inside.	Pipes frozen in wall.	Other causes.	Cocks replaced by "Pneumatic" valves.	Leak on services from various causes undefined.
46	74	559	8	136	131

New hydrants (old pattern) put in during year 1888 (new work) 8
New hydrants put in during year 1888 5 nozel 40
New patent hydrants (2 nozle put in during year 1888 (new work)..... 44
New patent hydrants in position up to January 1889 (2 nozle) 348
New patent hydrants in position up to January 1889 (5 nozle) 64
"Pneumatic" valves put in during year 1888 (new work) 2517
Pneumatic cocks put in up to January 1889 new work & repairs 7367

SCHEDULE No 6.—*Continued.*

Hydrants frozen during winter commencing Dec. 1887 ending April 1888.

December	January	February	March		Hydrants reported frozen 2309 times.
189	910	699	511		 448

No. 7.—COMPARATIVE TABLE SHOWING THE AVERAGE DAILY CONSUMPTION FOR EACH MONTH AND FOR EACH YEAR FROM 1879 TO 1888 IN THE CITY OF MONTREAL.

MONTHS.	1879	1880	1881	1882	1883	1884	1885	1886	1887	1888
January	8,711,520	8,675,067	9,548,641	8,269,612	10,575,363	9,824,502	10,970,751	12,751,651	11,932,374	12,562,557
February	8,825,552	8,892,987	9,126,557	8,669,932	10,745,981	9,882,105	11,674,832	12,570,484	11,917,259	13,259,355
March	9,082,027	9,430,162	9,009,366	9,028,616	10,531,461	9,881,460	11,224,575	12,195,561	12,249,017	14,035,642
April	9,198,983	9,098,494	9,147,791	9,024,754	10,356,518	10,630,659	11,542,215	12,806,662	12,305,894	13,202,805
May	9,279,565	9,132,068	9,058,872	8,915,219	9,626,842	10,640,086	11,856,877	12,554,388	13,137,236	13,332,800
June	9,487,630	10,238,392	9,674,104	9,386,071	10,566,558	10,885,668	11,882,888	12,982,829	13,835,448	14,159,814
July	10,025,080	10,574,083	10,423,208	10,305,110	11,299,205	11,895,114	12,716,836	13,595,315	15,463,159	15,459 569
August	10,312,223	11,097,648	10,548,459	10,811,241	11,374,208	11,827,670	12,777,687	13,548,242	14,915,013	14,239,073
September	9,753,752	10,720,280	10,981,133	10,787,854	11,038,378	11,656,141	11,750,260	13,543,309	13,565,962	13,635,784
October	9,034,211	10,131,764	10,285,658	10,015,944	11,101,760	11,048,723	12,434,970	12,498,404	12,868,967	13,025,260
November	8,270,213	9,230,560	9,093,571	9,796,205	10,091,780	10,343,280	12,495,335	11,181,895	12,983,318	12,413,281
December	8,169,285	9,046,544	8,350,180	9,727,230	9,331,761	10,301,871	12,283,395	11,477,885	11,390,324	11,717,790
Daily average for each year.	9,177,504	9,691,901	9,606,295	9,566,759	10,552,174	10,687,037	11,970,504	12,642,957	13,054,906	13,420,310
Increase over preceding year.	86,373	514 397	.....	.....	985,415	134,863	1,283,467	672,453	411,949	367,021
Decrease from preceding year.	.....	.....	85,606	39,536	.....	.....	.....	.....	.....	.....

No. 8.—SCHEDULE showing the different kinds and sizes of Water Meters belonging to the City and to private parties.

KINDS.	Sizes in inches.	Property of the City				Private Property.				Grand total.
		In the City.	Outside the City.	At the Work shop	Total.	In the City	Outside the City.	At the Work shop	Total.	
Gem	10	.....	.....	2	2	.....	.....	.....	.....	2
"	6	5	1	2	6	4	.....	.....	4	10
"	4	17	.....	3	20	1	.....	.....	1	21
"	3	53	.....	2	55	9	.....	1	10	65
"	2	26	.....	7	33	5	.....	4	9	42
"	1½	8	.....	4	12	4	.....	1	5	17
"	1	.....	.....	7	7	.....	.....	.....	.....	7
"	¾	1	.....	11	12	.....	.....	2	2	14
"	½	.....	.....	73	73	1	.....	3	4	77
Union	3	.....	.....	1	1	.....	.....	.....	.....	1
"	2	.....	.....	2	2	1	.....	.....	1	3
"	1	28	1	2	31	1	.....	.....	1	32
"	⅝	111	.....	19	130	4	.....	.....	4	134
Rotary Union	4	.....	.....	2	2	.....	.....	.....	.....	2
"	3	.....	.....	1	1	.....	.....	1	1	2
"	2	.....	.....	2	2	.....	.....	.....	.....	2
"	1½	2	.....	3	5	.....	.....	.....	.....	5
"	1	.....	.....	3	3	.....	.....	.....	.....	3
"	¾	.....	.....	14	14	.....	.....	.....	.....	14
"	⅝	.....	.....	3	3	.....	.....	.....	.....	3
Crown	6	1	.....	.....	1	1	1	.....	2	3
"	4	7	1	.....	8	.....	.....	.....	.....	8
"	3	3	.....	2	5	1	.....	.....	1	6
"	2	11	1	.....	12	3	.....	.....	3	15
"	1½	12	.....	1	13	.....	.....	.....	.....	13
"	1	30	.....	3	33	.....	.....	.....	.....	33
"	¾	39	1	2	42	1	.....	.....	1	43
"	½	52	1	8	61	2	1	.....	3	64
"	⅝	.....	.....	2	.....	.....	.....	.....	.....	2
Worthington	4	.....	.....	.....	.....	1	.....	.....	1	1
"	3	1	.....	1	2	.....	.....	.....	.....	2
"	2	10	.....	2	12	5	.....	.....	5	17
"	1½	14	.....	.....	14	1	.....	.....	1	15
"	1	45	.....	3	48	.....	.....	.....	.....	48
"	⅝	62	.....	6	68	5	.....	3	8	76
Continental	⅝	3	.....	3	6	.....	.....	.....	.....	6
Empire	1	6	.....	1	7	.....	.....	.....	.....	7
"	¾	11	.....	1	12	1	.....	.....	1	13
Siemens	2	.....	.....	1	1	.....	.....	.....	.....	1
"	1	.....	.....	1	1	.....	.....	.....	.....	1
Undine	½	.....	.....	1	1	.....	.....	.....	.....	1
Maxime	1	.....	.....	.....	.....	.....	.....	1	1	1
Lewis	⅝	.....	.....	1	1	.....	.....	.....	.....	1
Equitable	1	.....	.....	.....	.....	1	.....	.....	1	1
"	⅝	.....	.....	1	1	.....	.....	.....	.....	1
Sportous	½	.....	.....	1	1	.....	.....	.....	.....	1
Total		556	6	204	766	52	2	16	70	836

No. 7.—COMPARATIVE TABLE SHOWING THE AVERAGE DAILY CONSUMPTION FOR EACH MONTH AND FOR EACH YEAR FROM 1879 TO 1888 IN THE CITY OF MONTREAL.

MONTHS.	1879	1880	1881	1882	1883	1884	1885	1886	1887	1888
January	8,711,520	8,675,067	9,548,641	8,269,612	10,575,363	9,824,502	10,970,751	12,751,651	11,932,374	12,562,557
February	8,825,552	8,892,987	9,126,557	8,669,932	10,745,981	9,882,105	11,674,832	12,570,484	11,917,259	13,259,355
March	9,082,027	9,430,162	9,009,366	9,028,616	10,531,461	9,881,460	11,224,575	12,195,561	12,249,017	14,035,642
April	9,198,983	9,098,494	9,147,791	9,024,754	10,356,518	10,630,659	11,542,215	12,806,662	12,305,894	13,202,805
May	9,279,565	9,132,068	9,058,872	8,915,219	9,626,842	10,640,086	11,856,877	12,554,388	13,137,236	13,332,800
June	9,487,630	10,238,392	9,674,104	9,386,071	10,566,558	10,885,668	11,882,888	12,982,829	13,835,448	14,159,814
July	10,025,080	10,574,083	10,423,208	10,305,110	11,299,205	11,895,114	12,716,836	13,595,315	15,463,159	15,459 569
August	10,312,223	11,097,648	10,548,459	10,811,241	11,374,208	11,827,670	12,777,687	13,548,242	14,915,013	14,239,073
September	9,753,752	10,720,280	10,981,133	10,787,854	11,038,378	11,656,141	11,750,260	13,543,309	13,565,962	13,635,784
October	9,034,211	10,131,764	10,285,658	10,015,944	11,101,760	11,048,723	12,434,970	12,498,404	12,868,967	13,025,260
November	8,270,213	9,230,560	9,093,571	9,796,205	10,091,780	10,343,280	12,495,335	11,181,895	12,983,318	12,413,281
December	8,169,285	9,046,544	8,350,180	9,727,230	9,331,761	10,301,871	12,283,395	11,477,885	11,390,324	11,717,790
Daily average for each year.	9,177,504	9,691,901	9,606,295	9,566,759	10,552,174	10,687,037	11,970,504	12,642,957	13,054,906	13,420,310
Increase over preceding year.	86,373	514 397	.....	.....	985,415	134,863	1,283,467	672,453	411,949	367,021
Decrease from preceding year.			85,606	39,536	.....	.....				

No. 8.—Schedule shewing the different kinds and sizes of Water Meters belonging to the City and to private parties.

KINDS.	Sizes in Inches.	Property of the City.				Private Property.				Grand total.
		In the City.	Outside the City.	At the Work shop	Total.	In the City.	Outside the City.	At the Work shop	Total.	
Gem	10	.....	.....	2	2	.....	.....	.....	.....	2
"	6	5	1	2	6	4	.....	.....	4	10
"	4	17	.....	3	20	1	.....	.....	1	21
"	3	53	.....	2	55	9	.....	1	10	65
"	2	26	.....	7	33	5	.....	4	9	42
"	1¼	8	.....	4	12	4	.....	1	5	17
"	1	.....	.....	7	7	.....	.....	.....	.....	7
"	¾	1	.....	11	12	.....	.....	2	2	14
"	½	.....	.....	73	73	1	.....	3	4	77
Union	3	.....	.....	1	1	.....	.....	.....	.....	1
"	2	.....	.....	2	2	1	.....	.....	1	3
"	1	28	1	2	31	1	.....	.....	1	32
"	⅝	111	.....	19	130	4	.....	.....	4	134
Rotary Union	4	.....	.....	2	2	.....	.....	.....	.....	2
"	3	.....	.....	1	1	.....	.....	1	1	2
"	2	.....	.....	2	2	.....	.....	.....	.....	2
"	1½	2	.....	3	5	.....	.....	.....	.....	5
"	1	.....	.....	3	3	.....	.....	.....	.....	3
"	¾	.....	.....	14	14	.....	.....	.....	.....	14
"	½	.....	.....	3	3	.....	.....	.....	.....	3
Crown	6	1	.....	.....	1	1	1	.....	2	3
"	4	7	1	.....	8	.....	.....	.....	.....	8
"	3	3	.....	2	5	1	.....	.....	1	6
"	2	11	1	.....	12	3	.....	.....	3	15
"	1½	12	.....	1	13	.....	.....	.....	.....	13
"	1	30	.....	3	33	.....	.....	.....	.....	33
"	¾	39	1	2	42	1	.....	.....	1	43
"	½	52	1	8	61	2	1	.....	3	64
"	⅝	.....	.....	2	.....	.....	.....	.....	.....	2
Worthington	4	.....	.....	.....	.....	1	.....	.....	1	1
"	3	1	.....	1	2	.....	.....	.....	.....	2
"	2	10	.....	2	12	5	.....	.....	5	17
"	1½	14	.....	.....	14	1	.....	.....	1	15
"	1	45	.....	3	48	.....	.....	.....	.....	48
"	½	62	.....	6	68	5	.....	3	8	76
Continental	⅝	3	.....	3	6	.....	.....	.....	.....	6
Empire	1	6	.....	1	7	.....	.....	.....	.....	7
"	¾	11	.....	1	12	1	.....	.....	1	13
Siemens	2	.....	.....	1	1	.....	.....	.....	.....	1
"	1	.....	.....	1	1	.....	.....	.....	.....	1
Undine	¾	.....	.....	1	1	.....	.....	.....	.....	1
Maxime	1	.....	.....	.....	.....	.....	.....	1	1	1
Lewis	⅝	.....	.....	1	1	.....	.....	.....	.....	1
Equitable	1	.....	.....	.....	.....	1	.....	.....	1	1
"	⅝	.....	.....	1	1	.....	.....	.....	.....	1
Sportous	½	.....	.....	1	1	.....	.....	.....	.....	1
Total		556	6	204	766	52				8

No. 9.—Schedule showing the Pipes, Hydrants, Valves, Services, etc., laid in the City of Montreal during the year 1888.

Name of streets.	Length in feet of Cast Iron Pipes.							Number of Valves.							Wrought Iron Pipes.	Hydrants.	Length of Lead Pipes in feet.	Houses supplied.	Brass Cocks.	Pneumatic Cocks.
	20"	12"	10"	8"	6"	4"	Total.	20"	12"	10"	8"	6"	4"	To'l.						
East Ward.																				
Jacques-Cartier Sq..	.....	.....	.....	.....	.....	63	63	.....	.....	.....	.....	.....	1	1	.....	.....	.....	.....	.....	.....
Notre-Dame.....	.....	...	.....	12	.....		12	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....
Commissioners.....	.....	.....	.....	.....	9		9	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....
Total.....	.....	.....	.....	12	9	63	84	.....	.....	.....	.....	.....	1	1	.....	2	.....	.....	.....	.....
Center Ward.																				
St. François-Xavier	.....	.....	137	.....	4	9	150	.....	.....	1	.....	.....	.....	1	.....	.....	....	.....	.....	.....
Notre-Dame.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	105	4	.....	4
Total.....	.....	.....	137	.....	4	9	150	.....	.....	1	.....	.....	.....	1	.....	.....	105	4	.....	4
West Ward.																				
Notre-Dame.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	23	2	.....	2
Craig.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	54	2	.....	2
St. Peter.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	.....
Fortification.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	14	.....	117	3	1	2
Total.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	14	.....	204	8	2	6

St. Ann's Ward.																			
Shannon					375	27	402					1		1		1			
Lusignan																	38	4	4
Canning																	25	2	2
St. Martin												1		1		1	80	4	4
Center					48		48					1		1		1	39	4	4
Colborne																	42	1	1
Riverside						3	3												
Murray																	75	6	6
St. Patrick																	48	2	2
Shearer																	77	3	3
Richmond																	69	2	2
Favard																	51	2	2
Eleonore																	156	8	8
Young																	36	1	1
St. Colomban																	68	4	4
Mullins																	58	3	3
Menai																	44	1	1
Maple Avenue																	64	3	3
Magdelen																	147	6	6
Brittania																	122	5	5
Ann																	21	1	1
Wellington																	143	7	7
Queen																	56	2	2
Duke																	22	1	1
Barré																	60	2	2
William																	165	7	7
Notre-Dame			40	4			44			1				1		1	73	3	3
Forfar																	24	1	1
Condé																1	42	2	2
Total			40	4	423	30	497			1		3		4		5	1845	87	87

Schedule showing the Pipes, etc.—*Continued.*

Name of streets.	Length in feet of Cast Iron Pipes.							Number of Valves.							Wrought Iron Pipes.	Hydrants.	Length of Lead Pipes in feet.	Houses supplied.	Brass Cocks.	Pneumatic Cocks
	20"	12"	10"	8"	6"	4"	Total.	20"	12"	10"	8"	6"	4"	To'l.						
St. Antoine Ward.																				
Victoria	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	94	2	.....	2
Thistle	.....	.....	.....	.....	.....	9	9	.....	.....	.....	.....	.....	1	1	.....	.....	.....	.....	.....	.....
Adeline	.....	.....	.....	.....	432	.....	432	.....	.....	.....	.....	1	.....	1	.....	1	164	11	.....	11
St. Léon	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	21	2	.....	2
Mt. Ste. Marie	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	20	1	.....	1
Chaboillez	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	22	2	.....	2
Buckingham	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	26	1	1	.....
Brunswick	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	19	2	.....	2
Baile	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	97	4	.....	4
Albert	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	18	2	.....	2
Bishop	.....	.....	.....	.....	36	.....	36	.....	.....	.....	.....	1	.....	1	.....	.....	811	19	.....	19
Crescent	.....	.....	.....	.....	1150	.....	1150	.....	.....	.....	.....	2	.....	2	.....	.....	392	19	.....	19
St. Martin	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	117	7	.....	7
Ste. Geneviève	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	97	8	1	7
Sherbrooke	.....	382	.....	.....	87	.....	469	.....	1	.....	.....	.....	.....	1	.....	.....	286	7	1	6
Redpath	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	18	1	.....	1
Prince	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	56	1	.....	1
Metcalfe	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	28	1	.....	1
Lorne Crescent	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	23	2	.....	2
Lagauchetière	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	126	3	.....	3
Sussex	.....	.....	.....	.....	296	.....	296	.....	.....	.....	.....	1	.....	1	.....	1	234	7	.....	7
Ste. Monique	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	41	1	.....	1

St. Matthew																	298	5		5
St. Luke																	132	4		4
Osborne																	9	1	1	
McTavish	1194			40			1234	2			2		1	4		2				
Mackay						45	45						1	1			541	15		15
Craig		1340	24	37	217	8	1626		5	1		3		9		5	84	4		4
Aylmer																	17	1		1
Inspector																	23	1		1
St. Antoine		3523		56	132	163	3874		3			2	7	12		11	182	9		9
Aqueduct						9	9									1	96	5		5
Notre-Dame				16			16									1	71	3		3
Durocher																	245	7		7
Dorchester		130					130		1					1			200	4		4
Guy																	51	1		1
Versailles																	237	9		9
University																	79	2		2
McGill College Av																	58	2		2
Stanley																	72	2		2
Canning																	148	10		10
Delisle																	80	5		5
Shuter																	206	9		9
St. Marc																	228	4		4
Mountain																	282	8		8
St. James		216		3			219				1			1			162	10		10
Lorne Avenue																	39	1		1
Mansfield																	127	4		4
Peel		1960			54	27	2041				4		1	5		4	106	3		3
Drummond						9	9										61	2		2
Chatham																	53	1		1
Windsor		1568		105			1673		4	5				9		5	19	3		3
St. Catherine																	168	10		10
Quesnel																	104	5		5
Seigneurs																	140	9		9
Total	1194	9119	24	257	2404	270	13268	2	14	6	7	10	11	49		31	7028	262	4	258

Schedule showing the Pipes, etc.—*Continued.*

Name of streets.	Length in feet of Cast Iron Pipes.							Number of Valves.							Wrought Iron Pipes.	Hydrants.	Length of Lead pipes in feet.	Houses supplied.	Brass Cocks.	Pneumatic Cocks.
	20"	12"	10"	8"	6"	4"	Total.	20"	12"	10"	8"	6"	4"	To'l						
St. Lawrence Ward																				
DeVerchère	.....	.....	.....	.....	162	18	180	.....	.....	.....	.....	.....	.....	.....	.....	1	220	10	.....	10
St. Alexander	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	15	1	.....	1
Hutchison	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	92	.....	68	4	.....	4
Church	.....	.....	.....	.....	118	.....	118	.....	.....	.....	.....	1	.....	1	.....	.....	24	1	.....	1
Balmoral	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	38	3	.....	3
Bagg	.....	.....	.....	.....	180	.....	180	.....	.....	.....	.....	1	.....	1	.....	1	594	26	.....	26
Sherbrooke	.....	.....	4	.....	.....	.....	4	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ste. Famille	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	118	6	.....	6
Ontario	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	24	1	.....	1
Mance	.....	.....	.....	.....	549	.....	549	.....	.....	.....	.....	.....	.....	.....	.....	1	192	7	.....	7
Dorchester	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	31	1	.....	1
Craig	.....	1912	.....	56	254	19	2241	.....	3	.....	1	4	.....	8	.....	8	.....	.....	.....	.....
Chenneville	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	124	7	.....	7
Park Avenue	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	54	2	.....	2
Lagauchetière	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	27	3	.....	3
Ste. Catherine	.....	.....	.....	.....	.....	90	90	.....	.....	.....	.....	.....	1	1	.....	.....	33	1	.....	1
St. Urbain	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	165	4	.....	4
Bleury	.....	.....	.....	.....	.....	54	54	.....	.....	.....	.....	.....	.....	.....	.....	.....	180	6	.....	6
St. Lawrence	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	80	2	.....	2
Total	.....	1912	4	56	1263	181	3416	.....	3	1	1	6	1	12	92	11	1987	85	.....	85

St. Jean-Bte. Ward.																			
Plessis																42	2		2
Papineau Road		450				450									1				
Dufferin					78	78				1						93	3		3
Champlain					1257	1257				1						1883	76		76
St. Jean-Baptiste					234	234				1						94	7		7
St. Dominique					1920	9	1929			2		2		3		1528	93		93
Berri																323	23		23
Marie-Anne																43	1		1
St. Hypolite					1942	27	1969			2		2		7		2983	206		206
Maple																431	25		25
Sanguinet					1494	9	1503			2		2		3		1265	79		79
St. Urbain																357	18		18
St. Lawrence																37	1		1
St. Denis		2300		68			2368			1		3		4		185	7		7
Laval Avenue					1960		1960			2		2		3		3258	178		178
Drolet					1001	18	1019			2		2		2		1012	59		59
Rachel		2818			162	5	2985		4	1		5		6		1744	86		86
Rivard					1733	54	1787			2		2		3		611	31		31
Total		5568		68	11781	122	17539		7	17		24		32		15889	895		895
St. Louis Ward.																			
St. Justin																40	3		3
St. Hypolite Lane																61	3		3
Sherbrooke						22	22				1	1							
Brunet					300		300								1	37	4		4
Perrault Lane																27	1		1
Lagauchetière Lane																34	2		2
Fortier																29	2		2
[illegible]																11	1		1
Carried over					300	22	322				1	1		1		239	16		16

Schedule showing the Pipes, etc.—*Continued.*

Name of streets.	Length in feet of Cast Iron Pipes.							Number of Valves.							Wrought Iron Pipes.	Hydrants.	Length of Lead Pipes in feet.	Houses supplied.	Brass Cocks	Pneumatic Cocks.
	20"	12"	10"	8"	6"	4"	Total.	20"	12"	10"	8"	6"	4"	To'l.						
St. Louis W'd.–Con.																				
Brought forward.	.....	.....	.....	.....	300	22	822	.....	.....	.....	.....	.....	1	1	.....	1	239	16	.....	16
Vitré	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	19	1	.....	1
St. Catherine	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	116	6	.....	6
Ontario	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	28	1	.....	1
Mignonne	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	68	4	.....	4
Dubord	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	56	2	.....	2
Craig	.....	1611	.....	57	297	7	1972	.....	3	1	.....	5	.....	9	.....	7	68	1	.....	1
Roy	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	30	2	.....	2
St. Lawrence	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	30	1	.....	1
Laval Avenue	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	38	1	.....	1
Drolet	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	72	4	.....	4
Albina	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	40	2	.....	2
St. Constant	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	82	4	.....	4
St. Denis	.....	.....	.....	.....	100	.....	100	.....	.....	.....	.....	1	.....	1	.....	1	11	4	.....	4
St. Dominique	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	251	14	.....	14
Sanguinet	.....	.....	.....	.....	685	.....	685	.....	.....	.....	.....	.....	.....	.....	.....	1	393	30	.....	30
German	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	31	2	.....	2
St. Hypolite	.....	.....	.....	.....	135	4	139	.....	.....	.....	.....	.....	.....	.....	.....	.....	115	6	.....	6
Total	.....	1611	.....	57	1517	33	3218	.....	3	1	.....	6	1	11	.....	10	1687	101	.....	101

St. James Ward.																			
Notre-Dame de L'de					376		376								1	100	8		8
Lacroix			550	18		18	586			2		1	3	6	1				
Commissioners				333	18		351				1	1		2	1				
St. Denis		2370			36		2406								4	924	28		28
Wolfe																78	8		8
Notre-Dame																24	1		1
Maple																291	13		13
Dorchester																294	13		13
Cherrier					369		369					1		1		393	10		10
Lagauchetière																37	1		1
St. Hubert					9	36	45					1		1	1	452	15		15
Visitation																101	5		5
St. Catherine		830		18	230	51	1129		1			7		8	2	33	1		1
Mignonne																45	1		1
Craig		2386		10	421	26	2843		4			11	2	17	9	54	4		4
St. André																150	9		9
Ontario																81	3		3
Beaudry																1002	25		25
Montana																380	17		17
Amherst																363	18		18
Berri					131		131					1		1		1041	38		38
Montcalm																42	2		2
St. André, lower																60	1		1
Total		586	550	379	1590	131	8236		5	2	1	23	5	36	19	5945	221		221
St. Mary Ward.																			
St. Mathieu, lane																73	6		6
St. Elizabeth, lane																120	3		3
St. Alphonse																121	6		6
Carried over																314	15		15

Schedule showing the Pipes, etc.—*Continued.*

Name of streets.	Length in feet of Cast Iron Pipes.							Number of Valves.							Wrought Iron Pipes.	Hydrants.	Length of Lead Pipes in feet.	Houses supplied.	Brass Cocks	Pneumatic Cocks.
	20"	12"	10"	8"	6"	4"	Total.	20"	12"	10"	8"	6"	4"	To'l.						
St. Mary W'd—Con.																				
Brought forward.	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	314	15	.....	15
Paterson Avenue...	.....	.....	.....	.....	.....	160	160	.....	.....	.....	.....	.....	.....	.....	.....	.....	237	16	.....	16
Nelleda	.....	.....	.....	.....	.....	184	184	.....	.....	.....	.....	.....	.....	.....	.....	.....	197	14	.....	14
Monarch	.....	.....	....	.....	180	....	180	.....	.....	.....	.....	1	.....	1	.....	1	.....	.....	.....	
Grant.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	41	4	.....	4
Burnett..	.....	.....	.....	.....	.....	350	350	.....	.....	.....	.....	.....	1	1	.....	.....	162	4	.....	3
Josaphat Lane.....	.....	.....	.....	.....	.....	129	129	.....	.....	.....	.....	.....	.....	.....	.....	1	185	11	.....	11
Jean Lane.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	35	2	.....	2
Notre-Dame.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	116	3	.....	3
Logan	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	76	3	.....	13
Visitation	.....	.....	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	231	11	.....	11
St. Rose.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	31	2	.....	2
St. Pierre Lane.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	70	6	....	6
Poupart.....	.....	.....	.....	.....	354	.....	354	.....	.....	.....	.....	.....	.....	.....	.....	1	249	20	.....	20
Parthenais.....	.....	.....	.....	.....	50	.....	50	.....	.....	.....	.....	1	....	1	.....	.....	1033	49	.....	49
Iberville.....	.....	.....	.....	.....	12	....	12	.....	....	.....	.....	.....	1	1	.....	1	301	14	.....	14
Dufresne.....	.....	.....	.....	.....	2	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	1	253	16	.....	16
Craig.....	.....	2381	.....	.....	705	21	3107	.....	5	.....	....	10	1	16	.....	8	129	8	.....	8
DeLorimier	.....	.....	.....	.....	36	.....	36	.....	.....	.....	.....	.....	.....	.....	.....	2	206	2	.....	2
Lafontaine.....	.....	.....	.....	.....	437	.....	437	.....	.....	.....	.....	2	.....	2	.....	.....	292	17	.....	17
Dorchester.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	29	2	.....	2
Suzanne	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	.....	.....	.....	.....	.....	56	5	.....	4

Mignonne					135		135					1		1			70	4		4
Papineau Road		1225			18		1243					1		1		4	559	35		35
Plessis																	151	11		11
Panet																	100	7		7
Gain																	390	26		26
Ontario																	173	9		9
St. Catherine		313	86		51		450			1				1		1	557	17		17
Shaw																	222	13		13
Fullum		2924	7	6	34	6	2987		3					3		6	662	40	1	39
Champlain		18	804		41	18	851			1				1		3	332	19		19
Maisonneuve																	395	19		19
Total		6861	897	6	2055	868	10697		8	2		16	3	29		29	7854	424	1	421
Hochelaga Ward.																				
Hudon																	78	6		6
Ontario					45		45					1		1			146	8		8
Notre-Dame																	455	17		17
Dézery		3100			45	12	3157		3	1				4		2	415	24		24
Frontenac					1085	18	1103									1	632	36		36
Seaver						18	18									1				
St. Germain Lane					630		630										475	18		18
Mignonne						36	36										72	3		3
Logan						34	34													
Marlborough						18	18									1				
Moreau																	104	4		4
St. Catherine																	74	5		5
Iberville																	434	19		19
Total		3100			1805	136	5041		3	1		1		5		5	2885	140		140

Schedule showing the Pipes, etc.—*Continued.*

Name of streets.	Length in feet of Cast Iron Pipes.							Number of Valves.							Wrought Iron Pipes.	Hydrants.	Length of Lead Pipes in feet.	Houses supplied.	Brass Cocks	Pneumatic Cocks.
	20"	12"	10"	8"	6"	4"	Total	20'	12"	10"	8"	6"	4"	To'l						
St. Gabriel Ward.																				
St. Luke	.....	.....	.....	.....	700	9	709	.....	.....	.....	.....	2	.....	2	.....	.....	50	3	.....	3
St. Henry	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	148	9	.....	9
St. Charles	.....	.....	.....	.....	1004	.....	1004	.....	.....	.....	.....	1	.....	1	....	1	347	17	.....	17
Ryder	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	43	2	.....	2
Rosary	.....	.....	.....	.....	212	.....	212	.....	.....	.....	.....	1	.....	1	.....	.....	25	1	.....	1
Paris	.....	.....	.....	.....	180	.....	180	.....	.....	.....	.....	.....	.....	.....	.....	.....	419	17	.....	17
Mullins	.....	.....	.....	.....	567	.....	567	.....	.....	.....	.....	1	.....	1	.....	2	25	1	.....	1
Magdalen	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	88	4	.....	4
Island	.....	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	27	1	.....	1
Hibernian	.....	.....	.....	....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	267	16	.....	16
Fortune	.....	.....	.....	.....	270	.....	270	.....	.....	.....	.....	1	.....	1	.....	.....	103	6	.....	6
Colvraine	.....	.....	.....	.....	900	.....	900	.....	.....	.....	.....	1	.....	1	.....	1	176	9	.....	9
Atwater	.....	.....	.....	.....	650	.....	650	.....	.....	.....	.....	1	.....	1	.....	1	188	6	.....	6
Ropery	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	35	5	.....	5
Richardson	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	220	9	.....	9
Bourgeois	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	278	8	.....	8
Grand Trunk	.....	.....	.....	.....	.....	27	27	.....	.....	.....	.....	.....	.....	.....	.....	1	213	13	.....	13
Rushbrooke	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	45	2	.....	2
Charron	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	.....	.....	.....	348	11	.....	14
Wellington	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	251	56	.....	6
Napoleon Road	.....	.....	.....	.....	12	.....	12	.....	.....	.....	.....	.....	.....	.....	.....	2	37	2	....	2
Knox	.....	.....	.....	.....	204	....	204	.....	.....	.....	.....	.....	.....	.....	.....	2	178	7	.....	7

Center					158		158							1	1038	53		53
Manufacturers														2	216	8		8
St. Patrick					48		48				1			3	78	4		4
Albert					36		86								366	17		17
St. Andrew						18	18							1				
Total					4941	54	4995				9	9		20	5209	240		240

RECAPITULATION 1888.

WARDS.	Length in feet of Cast Iron Pipes.							Number of Valves.							Wrought Iron Pipes.		Hydrants.	Length of Lead Pipes in feet.	Houses supplied.	Brass Cocks.	Pneumatic Cocks.
	20"	12"	10"	8"	6"	4"	Total	20"	12"	10"	8"	6"	4"	Total	2"	1½					
East	.....	.....	.....	12	9	63	84	.....	.....	.....	.....	.....	1	1	.....	.....	2	.....	.....	.....	.....
Center	.....	.....	137	.....	4	9	150	.....	.....	1	.....	.....	.....	1	.....	.....	.....	105	4	.....	4
West	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	14	.....	204	8	2	6
St. Ann	.....	.....	40	4	423	30	497	.....	.....	1	.....	3	.....	4	.....	.....	5	1845	87	.....	87
St. Antoine	1194	9119	24	257	2404	270	13268	2	14	6	7	10	11	49	.....	.....	31	7028	262	4	258
St. Lawr'ce	.....	1912	4	56	1263	181	3416	.....	3	1	1	6	1	12	92	.....	11	1987	85	.....	85
St. Jean-Bte	.....	5568	.....	68	11781	122	17539	.....	7	.....	.....	17	.....	24	.....	.....	32	15889	895	....	895
St. Louis	.....	1611	.....	57	1517	33	3218	.....	3	1	.....	6	1	11	.....	.....	10	1687	101	.....	101
St. James	.....	5586	550	379	1590	131	8236	.....	5	2	1	23	5	36	.....	.....	19	5945	221	.....	221
St. Mary	.....	6861	897	16	2055	868	10697	.....	8	2	.....	16	3	29	.....	.....	29	7854	424	1	421
Hochelaga	.....	3100	.....	.....	1805	136	5041	.....	3	1	.....	1	.....	5	.....	.....	5	2885	140	.....	140
St. Gabriel	.....	.....	.....	.....	4941	54	4995	.....	.....	.....	.....	9	.....	9	.....	.....	20	5209	240	.....	240
	1194	33757	1652	849	27792	1897	67141	2	43	15	9	91	22	181	92	14	164	50638	2467	7	2458

The total length of Cast Iron Pipes laid in the City during the year 1888 was 67141 feet say 1194 feet of 20", 33757 feet of 12", 1652 feet of 10", 849 feet of 8", 27792 feet of 6" and 1897 feet of 4".—Two Valves of 20", 43 of 12", 15 of 10" 9 of 8" 91 of 6" and 22 of 4", say 181 Valves and 164 Fire Hydrants—2467 houses were supplied with water.

There were also laid for private Corporations through the City 110 feet of 4", C. I. Pipe, 223 feet of 6" and 6 feet of 12" also 25 Valves of 4" & 8 of 6") One 18" Valve on suction pipe of New H. L. Engine.

There were 375 feet of old 4" pipe taken up in Shannon Street, St. Anne Ward.

" 2924 " 6" " " Fullum " St. Mary "

" 370 " 6" " " St. Denis, " St. James " and 2000 feet left in the ground as useless.

" 400 " 8" " " Craig " St. Lawr'ce " " " " "

" 200 " 4" " " St. Denis " St. Jean-Bte " " " "

No. 10 SCHEDULE showing the Pipes, Hydrants and Valves laid down and the number of houses supplied with water in the City of Montreal up to 1st January 1880.

WARDS.	MAIN PIPES.												Lead Pipes.	VALVES.										Total.	Hydrants.		
	30"	24"	20"	16"	12"	10"	8"	6"	4"	3"	1½"	Total.		30"	24"	20"	16"	12"	10"	8"	6"	4"	3"	2½		Public.	Priv.	
East					1400	5483	302	2332	761	713	80	17922						1	5	1	13	31	2		53	40	1	770
Center		1255			1352	3418	22	3710	6995	161	35	16948	165		2			2	6	4	11	30	7		62	26	4	608
West		1490		654	2006	5024	678	5537	8209	585		24183					1	4	14	4	11	32	18		84	41		810
St. Ann					6786	19732	619	26323	54547	53		108060	1231					12	25	1	49	100	3	1	191	162	16	3172
St. Antoine	1310	2272	1194	1940	36879	11835	602	40818	107029	523	442	204874	2068		4	2	1	46	24	12	72	197	5		360	276	7	6850
St. Lawrence	2135	2640			4538	4245	2929	20019	25440			61946	694		1			4	5	12	41	46	1		110	98		3104
St. Jean-Baptiste					9438	360	68	17572	219			27657						15			23	1			37	50		1073
St. Louis	1645				1704	11190	1687	20912	32443			69581	3062	1				5	11	1	33	53			103	92		3847
St. James	2488				5646	2940	379	30898	43445			85796	620	1				7	4	2	60	74			148	120	2	5771
St. Mary	2585	6640		100	6913	9235	16	48373	41081	60		115003	2679	1	3		1	11	13		63	70	1		183	14	8	5870
Hochelaga		3700			5500	6165		13988	15813			45166	455					5	4		23	22	1		55	51		1781
St. Gabriel							67	5931	105			6103									1	3			13	25		321
Total	10193	17997	1194	2694	82162	79627	7369	236413	342938	2095	557	783239	10974	4	10	2	3	110	10	38	428	659	38	1	1399	1145	38	44640
Rising Mains	13360	26606			1674			15				41655		9	23		1	2			2				37			3
Exhib. Grounds									5484			5484										3		3	4		
G. T. Ry. Point St. Charles								7737	1861			9598														20	
Total	23553	44603	1194	2694	83836	79627	7369	244165	350283	2095	557	839976	10974	13	33	2	4	112	10	38	430	662	38	1	1439	1149	58	44643

No. 11.—Schedule showing the average pressure in the City Mains during the year 1888.

MONTHS.	At W. Works Shop Lagauchetière St., cor. st. Chs.-Borr'e	Central Fire Station Craig street.	Fire Station No. 2, St. Gabriel street.	Fire Station No. 3, Wellington street.	Fire Station No. 4, Chaboillez square.	Fire Station No. 5, St. Catherine street	Fire Station No. 6, Ontario street.	Fire Station No. 7, Dalhousie square.	Fire Station No. 8, Craig street.	Fire Station No. 9, Centre street.	Fire Station No. 10, St. Catherine street.	Fire Station No. 11, Ontario street.	Fire Station No. 12, Seigneurs street.	Fire Station No. 13, Desery street.	Fire Station No. 14, St. Jean-Bte. Ward. Hochelaga Ward.	Fire Station No. 15, Island street, St. Gabriel Ward.	Average Surface of water in McTavish Reserv'r.
Height above datum.....	42.00	32.00	57.00	27.00	.....	97.00	66.00	70.50	43.00	26.00	130.00	70.00	36.00	44.00	.....	.....	205.00
1888																	
January.....	65.00	72.00	.....	77.00	78.00	45.00	65.00	57.00	71.00	69.00	30.00	66.00	67.00	72.00	.....	72.00	202.72
February.....	65.00	72.00	.....	78.00	74.00	45.00	65.00	57.00	71.00	69.00	30.00	66.00	67.00	72.00	.....	70.00	204.71
March	65.00	72.00	.....	79.00	77.00	45.00	65.00	58.00	71.00	70.00	30.00	66.00	67.00	72.00	.....	70.00	204.83
April.....	65.00	72.00	.....	78.00	77.00	45.00	65.00	57.00	72.00	70.00	30.00	66.00	67.00	72.00	.....	70.00	203.87
May.....	65.00	72.00	.....	78.00	77.00	45.00	65.00	58.00	71.00	70.00	30.00	66.00	67.00	68.00	.....	70.00	203.62
June.....	65.00	72.00	59.00	80.00	77.00	45.00	65.00	58.00	71.00	73.00	30.00	66.00	67.00	69.00	.....	70.00	203.57
July.....	65.00	75.00	56.00	77.00	77.00	45.00	65.00	58.00	71.00	70.00	30.00	66.00	67.00	69.00	.....	70.00	203.70
August.....	65.00	72.00	65.00	79.00	77.00	.....	65.00	58.00	71.00	70.00	30.00	66.00	77.00	69.90	.....	70.00	204.52
September...	65.00	72.00	65.00	76.00	77.00	.....	65.00	58.00	71.00	67.00	30.00	67.00	77.09	68.00	.....	70.00	203.87
October.....	65.00	72.00	62.00	77.00	77.00	.....	65.00	58.00	71.00	72.00	30.00	66.00	77.00	69.00	.....	70.00	204.25
November....	65.00	72.00	62.00	77.00	77.00	.....	65.00	58.00	70.00	70.00	30.00	66.00	77.00	69.00	.....	70.00	204.43
December....	65.00	72.00	62.00	79.00	75.00	45.00	65.00	59.00	70.00	71.00	30.00	66.00	77.00	69.00	.....	70.00	204.47
Average 1888	65.00	72.25	61.57	77.91	76.66	45.00	65.00	57.83	70.92	70.09	30.00	66.09	72.00	69.83	.....	70.16	204.04
" 1887	65.00	73.00	62.00	76.00	80.00	46.00	63.00	57.00	70.00	69.00	30.00	66.00	68.00	66.00	.....	.....	.....

No. 12.—Schedule showing the position of Public Fountains erected in the City of Montreal, up to January 1889.

Nos.	LOCATION.	Cast Iron Basins.	Stone & Cement Basins.	Stone Fountains.	Cast Iron Fountains.	Wood Fountains.	Cast Iron Cattle drinking troughs.	Number of jets.
1	Beaver Hall Square	.....	.....	.....	1	.....	.....	2
2	Bellerive Park	1	.....	.....	1	.....	.....	2
3	Bleury and Dorchester	.....	.....	1	.....	.....	.....	1
4	Bonsecours Market	.....	.....	.....	.....	2	.....	2
5	Chaboillez Square	.....	.....	.....	.....	.....	1	1
6	Colborne at Flour Sheds	.....	.....	.....	1	.....	1	2
7	Court House Square	2	1	2	.....	.....	.....	5
8	Craig, at Victoria Square	.....	.....	1	.....	.....	3	1
9	Craig, opposite Drill Hall	.....	.....	.....	1	.....	.....	1
10	Custom House Square	.....	.....	.....	1	.....	1	1
11	Dorchester and Dominion Square	.....	.....	.....	1	.....	1	1
13	Dufferin Square	.....	.....	.....	1	.....	.....	1
14	Grey-Nun and Common	.....	.....	.....	.....	.....	1	1
15	Guilbault and St. Lawrence	.....	.....	.....	1	.....	1	1
16	High Level Reservoir	.....	.....	.....	1	.....	.....	1
17	Jacques-Cartier Square and St. Paul	1	.....	.....	1	.....	1	5
18	Inspector, at Hay-Market	.....	.....	.....	.....	.....	1	1
19	McTavish Street, opposite Reservoir	.....	.....	.....	1	.....	.....	1
20	McGill and Common, Ex. W. H.	.....	.....	1	.....	.....	1	1
21	McGill, corner of Common	.....	.....	.....	1	.....	1	1
22	Mill, at Waste Weir	.....	.....	.....	.....	1	1	2
23	Moreau, near Notre-Dame	.....	.....	.....	1	.....	.....	1
24	Mountain Park, foot of Elevator	.....	.....	.....	1	.....	.....	1
25	Notre-Dame and Suzanne	.....	.....	.....	1	.....	1	1
26	Ontario and St. Denis	.....	.....	.....	.....	1	1	2
27	Ontario and Champlain	.....	.....	.....	.....	1	1	2
28	Papineau Square	.....	.....	.....	.....	1	1	2
29	Phillips Square	.....	.....	.....	1	.....	.....	1
30	Phillips Square and St. Catherine	.....	.....	.....	.....	.....	1	1
31	Park Avenue, North of Prince Avenue	.....	.....	.....	.....	3	.....	3
32	Place d'Armes	2	1	.....	.....	.....	.....	5
33	Prince and Common	.....	.....	.....	1	.....	1	2
34	Richmond Square	2	.....	1	.....	.....	.....	3
35	Seigneurs and William	.....	.....	.....	1	.....	1	2
36	Sherbrooke, near Drummond	.....	.....	.....	.....	1	1	1
37	Sherbrooke, near Guy	.....	.....	.....	.....	1	1	1
38	St. Ann's Market	.....	.....	.....	.....	4	.....	2
39	St. Antoine Market	.....	.....	.....	1	.....	1	2
40	St. Catherine and DeLorimier Avenue	.....	.....	.....	.....	1	1	2
41	St. Gabriel Market	.....	.....	.....	.....	1	1	2
42	St. Lawrence, near Marie-Anne	.....	.....	.....	1	.....	1	1
43	St. Louis Park	1	.....	.....	2	.....	.....	7
44	St. Patrick Square	1	.....	.....	1	.....	.....	2
45	St. Patrick and Napoleon	.....	.....	.....	1	.....	1	1
46	St. Thomas and Ottawa	.....	.....	.....	1	.....	1	2
47	Victoria Square, South of Craig	1	2	.....	.....	.....	.....	7
48	Victoria Square, North of Craig	3	.....	.....	.....	.....	.....	4
49	Viger Square Basin No. 1	1	.....	.....	.....	.....	.....	1
50	Viger Square Basin No. 2, 7	3	.....	.....	.....	.....	.....	9
51	Viger Square	.....	1	1	.....	.....	.....	2
52	Viger Market	.....	.....	.....	.....	2	6	6
53	Wellington and St. Patrick	.....	.....	.....	.....	1	1	2
54	Wellington and Centre	1	.....	.....	.....	.....	.....	1
55	Wellington and Magdalen	.....	.....	.....	1	.....	.....	

SCHEDULE No. 12.—*Continued.*

Nos.	LOCALITY. (Exhibition Grounds.)	Cast Iron Fountains.	Wood Fountains.	Cattle water troughs.	Urinals.	Number of jets.	Street watering nozzle.
1	Distributed over grounds	.....	.....	12	.....	12	
2	For ice water	....	2	.....	.....	8	
3	Opposite Agricultural Buildings	.....	1	.....	.....	1	
4	Distributed over grounds for fire purposes	.....	.....	.....	.....	4	
	PARK AVENUE.						
	Opp. old St. Roch Hospital	.....	.....	.....	.....	.....	1
	ALONG THE WHARVES.						
	LOCALITY.						
1	Wind Mill Point	.....	1	1	1	3	
2	Allan's Wharf	1	.....	.....	1	2	
3	Allan's Sheds	.....	.....	1	.....	2	
4	Opposite Custom House	.....	.....	.....	1	1	
5	King's Basin	1	.....	.....	.....	1	
6	Dominion Line	.....	.....	1	1	3	
7	Foot of Jacques-Cartier Square	1	.....	.....	.....	1	
8	Beaver Line	.....	.....	1	1	3	
9	Donaldson Line	.....	.....	.....	1	1	
10	Longueuil Ferry	.....	.....	.....	1	1	
11	Foot of Marlborough Street	.....	.....	.....	1	.....	
	Commissioner East of Barrack	.....	.....	.....	.....	1.4"	
	St. Gabriel Street, (foot of)	.....	.....	.....	.....	1.4"	

ADMINISTRATION.

SCHEDULE No. 13.—Detailed Statement of Expenditures for the year 1888.

	$ cts.	$ cts.
AQUEDUCT.		
Repairs to fences, gates and approaches	306 78	
Repairs to bridges and painting	113 26	
Cleaning ditches and berms	226 86	
Cutting weeds	149 86	
Guardian's salary	600 00	
Sundries	28 64	
Police service	194 08	
		1619 48
WHEEL HOUSE.		
D. Kearney, chief engineer	1600 00	
Candlish asst. "	700 00	
Vallée " "	700 00	
C. & A. Lecourt, oilers	880 00	
Repairs to machinery	239 23	
" buildings	478 14	
" dwellings, to brass shop	179 55	
Grounds round buildings	222 81	
Sundries	14 99	
Fire Wall	268 89	
Supplies, oils, tallow &c	1003 71	
		6287 32
ENGINE HOUSE.		
Repairs to boilers, steam pipes for new boilers	408 55	
Repairs to dwelling (painting)	688 46	
" coal shed	14 01	
Wages	5842 68	
Rent for land	50 00	
Coal for steam	13000 58	
S. Veary, engineer	1000 00	
Sundries	22 02	
Smoke consumer &c	328 21	
Supplies, oils, tallow &c	713 77	
		22068 28
Carried		.....

	$ cts.	$ cts.
Brought forward.....	.....	
TAIL RACE.		
Repairs to wood work of bridge on Lower Lachine Road.....	5 09	
Repairs to fences.....	50 20	
		55 29
RESERVOIR.		
Guardian's salary.....	800 00	
Repairs	306 88	
Shovelling snow.....	71 76	
Fuel & Light.....	160 25	
Sundries	65 79	
		1404 68
PIPE TRACK		
Repairs to valve chambers.....	4 50	
" valves...	94 39	
		98 89
HYDRANTS.		
Inspecting, Wages.....	3887 57	
Repairing do & materials.....	2485 30	
Thawing	832 29	
Rent of tap house, St. J. Bte Ward	149 15	
		7354 31
PUBLIC FOUNTAINS.		
Repairing wages.....	924 80	
" materials.....	279 97	
		1204 77
DISTRIBUTION PIPES.		
Repairs to mains, services & valves, wages 12952 59		
Thawing pipes & carting water.....	2029 54	
Inspecting service pipes inside houses	2826 05	
Dress for five inspectors.....	251 00	
Carried	18059.18	.....

	$ cts.	$ cts.
Brought forward.....	....	.....
Repairing footpaths and service boxes, wages.....	946 42	
Materials, Iron Castings, lead, tin &c.....	654 47	
Materials, wood, planks, nails &c.	196 63	
" bricks, cement, sand &c.	98 94	
" Rope, drain pipe &c.....	47 31	
		20002 95
Machine Shop.		
Materials, iron, copper, lead &c....	86 81	
Repairing roof.....	166 00	
		252 81
Work Shop on Lagauchetière st.		
Wages; foreman, clerks, turncocks, watchmen, mechanics, laborers	7902 50	
Iron, spikes, nails, tin, lead, &c.,&c	124 09	
Timber, wood, coal oil, lamps &c.	112 13	
Tools, pails, drinking cups &c.....	303 94	
Rent of foreman's house.....	200 00	
Telephone and connections with Police Station & City Ex.....	257 55	
Fuel and light.....	596 45	
Sundries.....	57 03	
Repairing buildings	355 19	
		9908 88
Engine house at McTavish Reservoir.		
One stoker and one assist. engineer	1418 44	
Fuel for engine.....	1431 05	
Oil, tallow &c.....	351 06	
Repairs to buildings.....	95 24	
" machinery	106 85	
Heating new engine room.....	38 25	
		3440 89.
Miscellaneous.		
Contingencies for office	42 12	
Postage, stamps, carters, &c.....	362 30	
Carried.....	404. 42	.....

	$ cts.	$ cts
Brought forward.....	404.42	.....
Horse keep, superintendent.....	600 00	
do Foreman.....	400 00	
Damages.....	289 58	
School taxes & assessments.....	771 34	
		2465 34

STAFF.

Superintendent.....	3500 00	
Assistant superintendent	2000 00	
Draughtsman.....	936 00	
1st clerk.....	1000 00	
2nd "	600 00	
3rd "	800 00	
		8836 00

METER DEPARTMENT.

2 Isnpector	1600 00	
Testing, placing—repairing meters	2274 71	
New meters.....	2839 03	
		6713 74

PIPE LAYING.

Wages	62760 24	
Tin and lead.....	3884 52	
Lead pipes.....	6306 59	
Copper brass works.....	6592 05	
Timber	785 97	
Bricks, sand, clay &c.....	1131 21	
Drain pipes	353 71	
Special castings.....	18773 36	
Cement	266 64	
Iron and steel	756 41	
Tools.....	1035 75	
Packing	242 51	
Wrought iron pipes.....	378 43	
Cast " "	86367 86	
Valve stones	465 00	
Sundries.....	1068 16	
Rock excavation in St. Jean-Bte. Ward.....	2622 80	
Carried.....	194791.21	.....

	$ cts.	$ cts.	
Brought forward.....	193791 21	.....	
Money refunded.....	192 32		
		193983 53	
Water meters bought last year....		1500 00	
			195483 53

SPECIAL WORKS.

New Pumping apparatus for high level service..... .. ..30639 86		
New Worthington engine..... 683 30		
New boilers for engine..... .....12079 41		
		43402 57
		$330599 73

Schedule No. 14.—Inventory of stock on hand, January 1889.

DESCRIPTION.	30"	24"	20"	16"	12"	10"	8"	6"	4"	3"
Cast Iron Pipes, (new).....	2705	360	132	492	7140	789	9	1755	972	0
Cast Iron Pipes, (old).....	528	0	0	0	630	54	0	459	576	0
Stop-Valves.....	2	3	0	2	0	2	5	0	13	17
Slip Sockets.....	12	22	9	29	19	7	2	25	91	3
Cast Iron Caps.....	2	0	0	0	21	4	6	15	69	4
Cast Iron Plugs	2	4	0	3	27	19	1	20	70	4
Cast Iron Double Bends....	0	0	0	0	0	0	4	13	16	0
Cast Iron Elbows.....	0	0	0	0	5	15	0	9	10	0

SIZE.	30x24	30x12	30x6	30x4	24x24	24x10	16x12	12x12	12x10	12x6	10x10	10x8	10x6	10x4
Crosses	1	6	2	1	5	1	1	7	6	3	6	1	7	1

SIZE.	8x8	8x6	8x4	6x6	4x4	4x3								
Crosses	4	17	7	7	7	4								

SIZE.	30x12	30x4	24x6	24x4	12x12	12x10	12x8	12x6	10x10	10x8	10x6	10x4	8x8	8x6
Tees....	1	5	5	1	5	5	8	8	4	8	13	5	1	3

SIZE.	8x4	6x6	4x4											
Tees....	1	4	2											

BREECHES.							TAPERS.							
SIZE.	30x30	30x24	24x22	12x12	12x10	10x10	30x24	16x12	12x10	12x8	12x6	10x6	8x6	6x4
	5	2	4	2	2	5	8	2	5	5	15	11	8	39

INVENTORY—*Continued.*

New hydrants	1	Drinking troughs for cattle.	1
Cast iron fender posts	90	Street watering nozzles(brass)	600
Hydrant covers assorted	105	" " " (iron).	115
Pieces for lengthening hyd.	34	Hydrant nozzles	35
Hydrant sleeves	3	Assorted spindles	71
Assorted valve covers	60	Rods for stop cocks,assorted	30
Hydrants already used (ass.)	54	New hydrants 5 nozzles	3

2" Cocks for iron pipe	2	2" iron pipes (in feet)	75
1½" " "	17	1½ " "	330
1" Pneumatic valves	1	1" " "	210
⅝ " "		1" Lead pipe (in lbs)	39000
½ " "		⅝ " "	9651
2 way " "	14	½ " "	44304
3 " " "	2	20 Bars pig lead 66	2300
4 " " "	2	Block tin in lbs	50
1 coupling cocks	53	3/16 Brass tubing 66	20
3 way "	23	1½" Iron boxes	32
1" nozzles	13	1" " "	15
⅝ "	20	Valve stones, large	1
½" 's	105	Valve stone small	1
⅝" cro'. es	20		
1 x ⅝ T ⅝	117		
Assorted covers for boxes	104		
	2		

SCHEDULE No. 15.—Dwellings, Stores, Shops, Offices, Warehouses, Manufactories, Hotels, &c., in the City of Montreal for 1888-89 with the Assessed Water Rates thereon :

DWELLINGS.

Rate.	Assessed.	Tenanted.	Vacant.	Rate.	Assessed.	Tenanted.	Vacant.	Rate.	Assessed.	Tenanted.	Vacant.
5.00	2033	1810	223	.....	33071	31908	1163	....	35456	34260	1196
5.75	3747	3514	233	22.25	334	327	7	44.00	74	73	1
6.50	4860	4674	186	23.00	21	21	.....	44.75	1	1	.....
7.25	6088	5888	200	23.75	193	190	3	47.75	78	75	3
8.00	3358	3295	63	25.25	457	448	9	50.75	1	1	.....
8.75	3060	3011	49	26.00	1	1	.....	51.50	44	43	1
9.50	960	948	12	26.75	201	200	1	53.75	1	1	.....
10.25	2120	2071	49	27.50	2	2	.....	55.25	64	62	2
11.00	296	291	5	28.25	125	125	.....	56.75	1	1	.....
11 75	1696	1658	38	29.00	133	132	1	59.00	33	32	1
12 50	363	357	6	29.75	176	175	1	62.75	57	57	.....
13.25	901	890	11	30.50	1	1	.....	66.50	5	5	.....
14.00	525	515	10	31.25	94	93	1	70.25	18	18	.....
14.75	732	723	9	32.75	297	291	6	77.75	29	28	1
15.50	128	128	.....	34.25	44	44	.....	85.25	2	2	.....
16.25	565	547	18	35.00	1	1	.....	92.75	14	14	.....
17 00	49	49	.....	35.75	12	12	.....	100.25	3	3	.....
17.75	634	618	16	36.50	103	103	.....	107.75	9	9	.....
18.50	103	100	3	37.25	12	12	.....	115.25	1	1	.....
19.25	262	258	4	38.00	2	2	....	122.75	4	4	.....
20 00	68	67	1	38.75	14	14	.....	137.75	3	3	.....
20.75	378	357	21	40.25	159	155	4	152.75	1	1	.....
21.50	145	139	6	41.75	3	3	.....	.....	.....	.....	.....
	33071	31908	1163		35456	34260	1196		35899	34694	1205

Dwellings, &c.—*Continued.*

STORES, SHOPS, OFFICES &c.

Rate.	Assessed.	Tenanted.	Vacant.	Rate.	Assessed.	Tenanted.	Vacant.	Rate.	Assessed.	Tenanted.	Vacant.
4.00	1084	956	128	.....	.....	.....	.....	.....	.....	.....	
5.00	740	678	62	36.00	7	7	.....	110.00	4	4	
6.00	1313	1224	89	38.00	43	43	.....	114.00	4	4	
7.00	382	370	12	39.00	1	1	.....	119 00	1	1	
8.00	516	493	23	40.00	1	1	.....	122.00	9	9	
9.00	178	173	5	41.00	1	1	.....	134.00	1	1	
10.00	577	558	19	42.00	88	87	1	142.00	5	5	
11.00	65	63	2	46.00	25	25	.....	146.00	1	1	
12.00	275	270	5	50.00	55	54	1	154 00	1	1	
13.00	49	48	1	52.00	2	2	.....	162.00	6	6	
14.00	348	339	9	54.00	16	15	1	170.00	1	1	
15 00	34	34	.....	56.00	1	1	.....	178.00	1	1	
16.00	144	141	3	58.00	24	24	.....	182 00	1	1	
17.00	22	22	.....	60.00	3	3	.....	192.00	1	1	
18.00	244	239	5	62.00	27	27	.....	194.00	1	1	
19.00	1	1	.....	64.00	1	1	.....	202.00	4	4	
20.00	104	102	2	66.90	28	26	2	210.00	1	1	
21.00	5	5	.....	70.00	4	4	.....	226.00	1	1	
22.00	193	190	3	72.00	1	1	.....	242.00	2	2	
23.00	1	1	.....	74.00	20	20	.....	262.00	1	1	
24.00	43	41	2	78.00	2	2	.....	282.00	1	1	
25.00	1	1	.....	82.00	25	24	1	290.00	1	1	
26.00	138	134	4	.....	.....	.....	.....	322.00	2	2	
28.00	29	28	1	90.00	8	8	.....	342.00	1	1	
29 00	1	1	.....	94.00	2	1	1	402.00	1	1	
30.00	77	76	1	98.00	5	5	.....	482.00	1	1	
31.00	5	5	.....	100.00	1	1	.....	602.00	1	1	
32.00	25	24	1	102.00	7	7	.....	642.00	2	2	
34.00	110	109	1	106.00	1	1	.....	.....	.....	.....	
	6704	6326	378		7110	6725	385		7159	6774	385

Dwellings, &c.—*Continued.*

HOTELS.

Rate.	Assessed.	Tenanted.	Vacant.	Rate.	Assessed.	Tenanted.	Vacant.	Rate.	Assessed.	Tenanted.	Vacant.
$12.00	92	92	.....	.....	484	482	2	.....	506	504	2
17.00	123	122	1	52.00	10	10	.....	97.00	1	1	
22.00	105	104	1	57.00	1	1	.....	102.00	2	2	
27.00	33	33	.....	62.00	3	3	.....	122.00	1	1	
32.00	60	60	.....	67.00	1	1	.....	142.00	1	1	
37.00	26	26	.....	72.00	3	3	.....	222.00	1	1	
42.00	37	37	.....	77.00	2	2	.....	.....	.....	.....	
47.00	8	8	.....	82.00	2	2	.....	.....	.....	.....	
	484	482	2		506	504	2		512	510	2

Horses.		Cows.		Stalls.		Urinals.		Water closets.	
No.	Rate.	No.	Rate.	No.	Rate.	No.	Rate.	No.	Rate.
5770	$2.00	1075	$1.00	479	$1.00	590	$1.00	762	$2.00
				344	2.00	35	1.50	388	3.00
						36	3.00	8042	4.00
						24	15.00	7	15.00
5770		1075		823		685		9199	

Dwellings, &c —*Continued.*

SPECIAL RATES.

Bakeries.		Beer Bottlers.		Fountains.		Steam Engines.			Sundries.	
No.	Rate.	No.	Rate.	No.	Rate.	No.	Horse Power	Total.	No	Rate.
2				9	$ 3.00	3	¼	1¼	10	$ 5.00
5	$ 3.00	3	$ 3.00	1	4.00	8	1	9	5	6.00
2	5.00	7	5.00	19	5.00	2	1½	3	1	7.00
4	6.00	4	10.00	1	6.00	18	2	36	1	8.00
3	7.00	2	12.00	2	7.00	9	3	27	8	10.00
1	8.00	1	15.00	1	8.00	13	4	52	1	15.00
13	9.00			1	9.00	8	5	40	1	25.00
1	10.00			5	10.00	9	6	54	1	50.00
5	11.00			1	14.00	8	7	56	1	600.00
6	12.00			1	15.00	7	8	56	1	750.00
5	15.00			2	19.05	1	8½	8½		
4	18.00			1	26.00	1	9	9		
1	20.00					4	40	10		
1	23.00					1	10½	10½		
1	25.00					1	11	11		
4	27.00					3	12	12		
	30.00					1	13	13		
						3	15	45		
						2	20	40		
						1	25	25		
						1	30½	30½		
						2	40	80		
						1	42	42		
						1	45	45		
						1	50	50		

RECAPITULATION.

	Tenanted.	Vacant.	Total.
Dwellings	34,694	1,205	35,899
Stores, shops, offices	6,774	385	7,159
Hotels and taverns	510	2	512
Total	41,978	1592	43,570

Steam engines	109
Special charges	145
Horse stalls	823
Water closets	9,199
Urinals	685
Horses	5,770
Cows	1,075

CASH RECEIPTS BY THE WATER DEPARTMENT DURING CIVIC YEAR ENDING 31ST DECEMBER 1888.

For dwellings, shops, offices and hotels		$457034.85
" Water closets		31687.00
" Urinals		990.50
" Horses		9870.00
" Cows		873.00
" Horse stalls		1005.00
" Steam engines		4515.00
" Permits for hose to water streets		914.00
" " for building purposes		3916.18
" Private Fountains		236 00
" Manufactories, &c		2419.00
" Water supplied through meter outside City	2977.73	
" " " " " inside City	70520.41	
		73498.14
		$586958.67
Miscellaneous		6559.24
Costs		58.55
		$593576.46
Less refunded		1703.16
Net collections		$591873.30
Amount returned into the treasury in 1887		515699.57
Increase		$76,173.73

CITY TREASURER'S OFFICE
Montreal, May 1889.

NAPOLÉON LESAGE,
Accountant.